Qlik Talend Data Integration

Contents

1   Qlik Cloud overview

Qlik is a leader in data and analytics with a core mission to provide solutions that ensure organizations can work smarter and use data as a competitive edge. Qlik Cloud is a powerful end-to-end solution for data and analytics services. Our platform empowers curiosity-driven exploration offering everyone – at any skill level – the ability to use data to make transformative change for their organization.

Through several data-focused services, the Qlik Cloud platform supports a full range of users and use-cases across the lifecycle from data integration to insight generation. These services include change data capture, transformation, data cataloging, application automation, self-service analytics and dashboards, conversational analytics, custom and embedded analytics, and alerting.

This document highlights key aspects of the Qlik Cloud platform, including architecture, security, governance, and reliability. It is designed to complement the technical documents for the Qlik solutions that run on the Qlik Cloud platform.

1.1 Architecture overview

All of Qlik's SaaS offerings and services, known collectively as Qlik Cloud®, run on the Qlik Cloud platform. The platform delivers the underlying compute, storage security, and governance features to provide services to our customers. The Qlik Cloud® Platform enables the creation of the analytics data pipeline. Powered by Qlik Cloud and a rich set of foundational services, it provides all the data integration and analytics services you need to transform raw data into informed action.
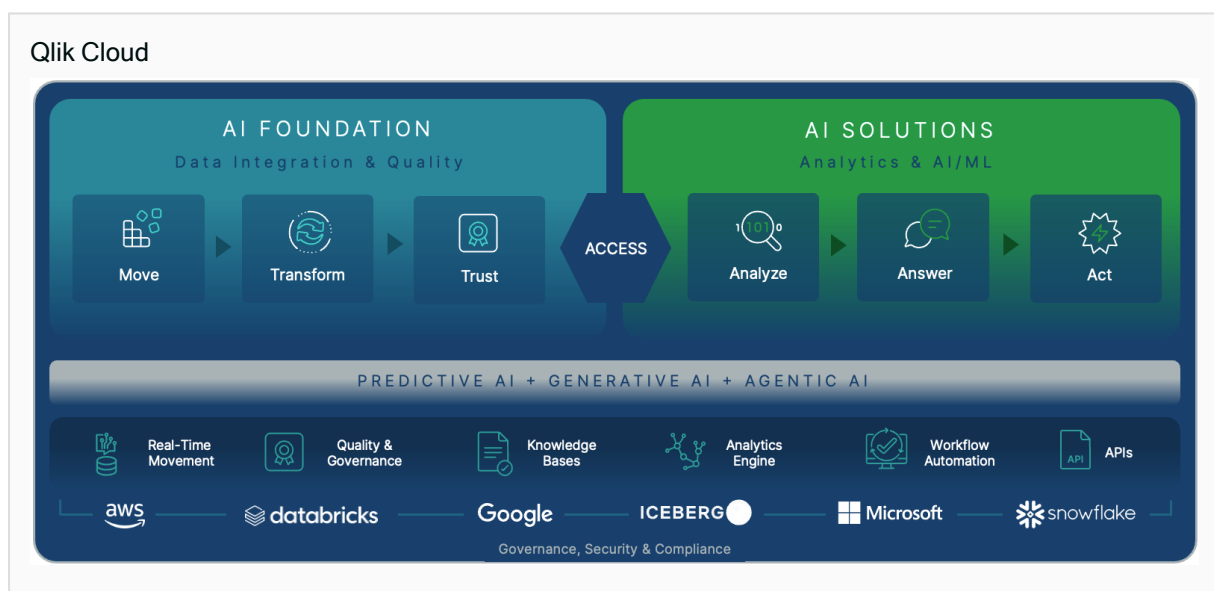
A customer's instance of the Qlik Cloud platform is called a tenant. It is logically separated from other tenants by using unique encryption keys. Access to the platform is controlled by the customer's configured identity provider and any access to functions within the platform is based on the entitlements the customer has assigned across roles and users. A number of services are available on the Qlik Cloud platform:

- Analytics – provides a complete third-generation analytics solution - Qlik Cloud Analytics
- Data Integration – provides the ability to manage your data assets and utilize change data capture to provide real-time access to your data, as well as application automation to automate integrations between cloud applications.

Qlik Cloud Analytics

Incorporating our premier offering Qlik Sense, Qlik Cloud Analytics sets the benchmark for third-generation analytics platforms, empowering everyone in your organization to make data-driven decisions. Built on our unique Associative Engine, it supports a full range of users and use-cases across the lifecycle from data to insight: self-service analytics, interactive dashboards, conversational analytics, custom and embedded analytics, mobile analytics, reporting, and alerting. It augments and enhances human intuition with AI-powered insight suggestions, automation, and natural language interaction.
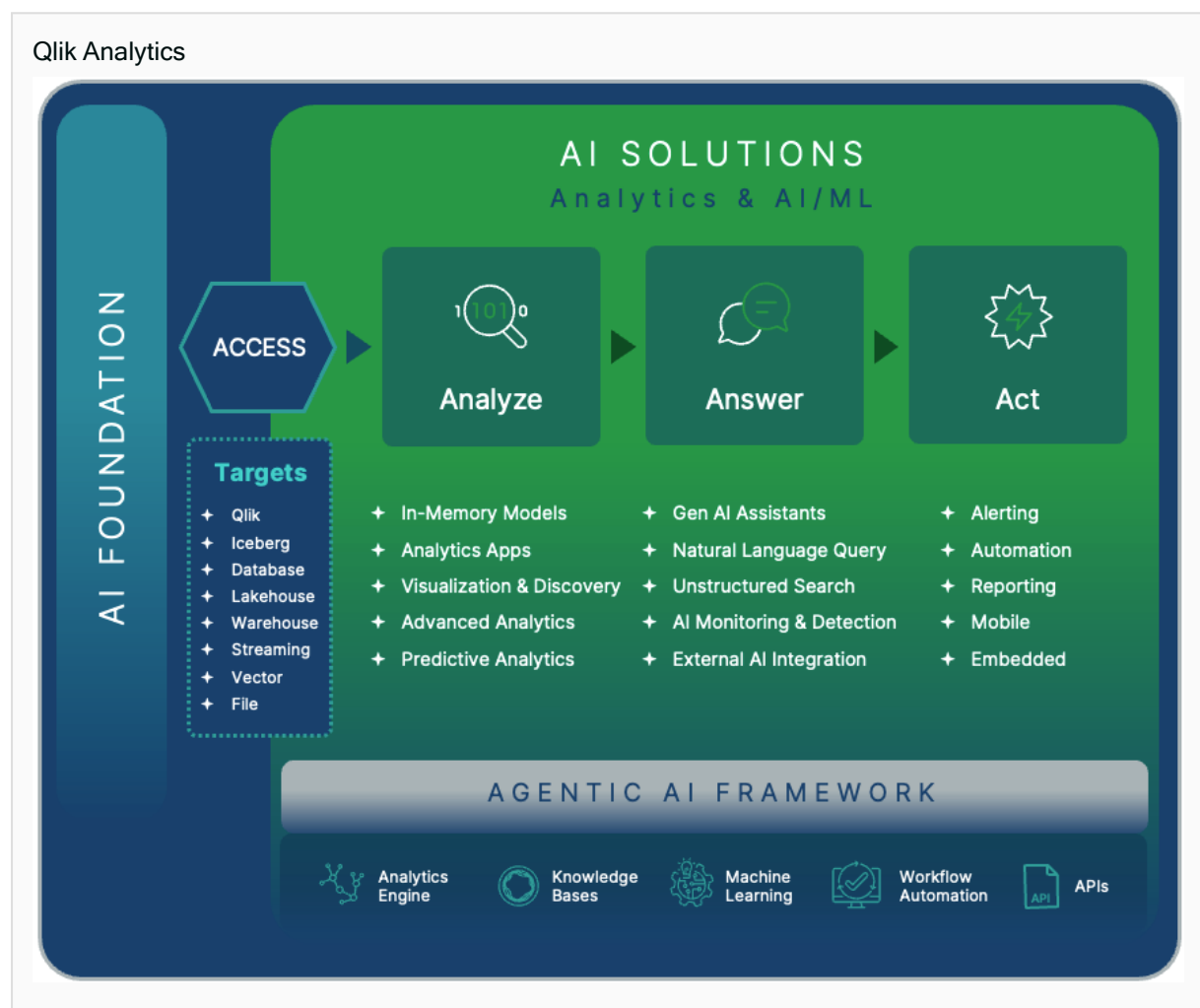
Qlik Talend Data Integration

Qlik Talend Data Integration is Qlik's hosted and managed data integration platform as a service (iPaaS). Our vision is to provide a broad variety of data integration services aimed at helping you move from passive to active BI. Qlik Talend Data Integration is architected for real-time data capture, transformation, and

analytics-ready data delivery leveraging a variety of methods in our unique change data capture approach.

Qlik Talend Data Integration

Real-time data movement

Replicate data from on-premises or cloud sources into Qlik Cloud and other leading cloud data platforms. Automatically and continuously ingest data without the need for job scheduling or scripting. Your data is updated without manual intervention to drive insights and actions of important business moments.

Data transformation

Quickly turn raw transaction records into consumption-ready data via auto-generated, push-down SQL. Our no-code interface helps you create reusable transformation pipelines that intelligently conform data to dimensional models or custom formats.

Qlik Automate

Qlik Automate is an integration platform to build integrations and automation flows between cloud applications. Closely integrated with the other Qlik Cloud services, Qlik Automate is able to build workflows

between your cloud applications using a no-code approach by connecting data sources, applying conditions, calling webhooks, adding loops, scheduling runs, and setting up triggers. For example, a webhook in your CRM system could initialize a reload of your sales performance Qlik Sense application.

1.2 Qlik Cloud Editions

There are several Editions of Qlik Cloud to meet the varied needs of our customers. The Evaluation Guides are designed to cover all the functionality of Qlik Cloud Analytics, Qlik Talend Data Integration and the Qlik Cloud Platform. There is also a special version of Qlik Cloud for Government organizations in the US, known as Qlik Cloud Government. Information provided in the Evaluation Guides does not imply that those features are available in all Editions.

For information on your edition, see the relevant link below:

- Qlik Cloud Analytics user-based subscriptions
- Qlik Cloud Analytics capacity-based subscriptions
- Qlik Talend Data Integration capacity-based subscriptions
- Qlik Cloud Government

2   Qlik Talend Cloud

Qlik Talend Cloud is a comprehensive cloud-based data integration solution that unifies data from diverse sources, enabling data transformation, quality assurance, application integration, and data governance. It provides the necessary tools to prepare and deliver trusted, AI-ready data to various systems and cloud environments, supporting initiatives like data warehousing, data lakes, and generative AI by streamlining data pipelines and ensuring data accuracy and compliance.

Qlik Talend Cloud consists of two parts:

- Qlik Talend Data Integration
- Talend Cloud

Qlik is in the process of merging these into the Qlik Cloud platform. The information in this document refers to the parts of Qlik Talend Cloud already running on the Qlik Cloud platform.

2.1 Qlik Talend Data Integration

Qlik Talend Data Integration is a powerful data integration fabric that helps data engineers deliver, transform, and unify enterprise data in real time via automated, governed, and reusable data pipelines.
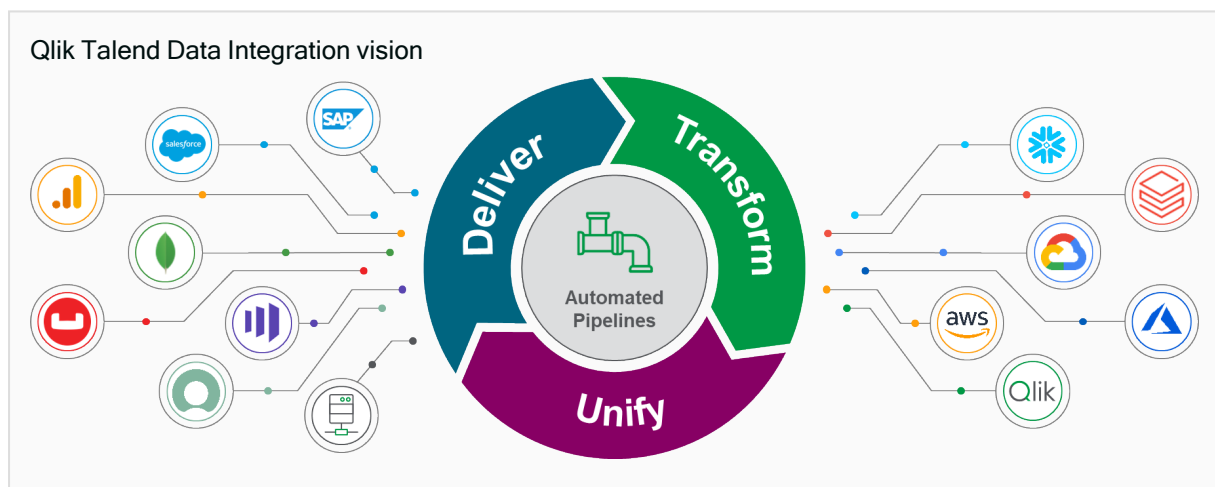
This cloud service provides the ability to create data pipelines to perform a variety of data integration tasks in support of your data architecture and analytics requirements. Onboarding data lets you automate incremental data movement and use delayed merging to reduce costs. You can leverage real-time, log-based change data capture and full load capabilities, with a secure connection to on-premise and private cloud data sources behind firewalls.

Once you have onboarded data, you can apply transformations for fit-for-purpose output, or automate patterns like data mart facts and dimensions. External views and live views are generated for data consumption, and historical data is tracked as full Type 2 data store (HDS). Transformations can be built using visual, AI-assisted, and SQL transformation flows.

Qlik Talend Data Integration pipelines support many data architectures including custom output, lakehouse medallion, and data warehouse architectures. The refined output can be used for many purposes, such as:

- Data mining
- Automated creation of data for analytics in the cloud
- Modernization of your data repository to support machine learning and other initiatives
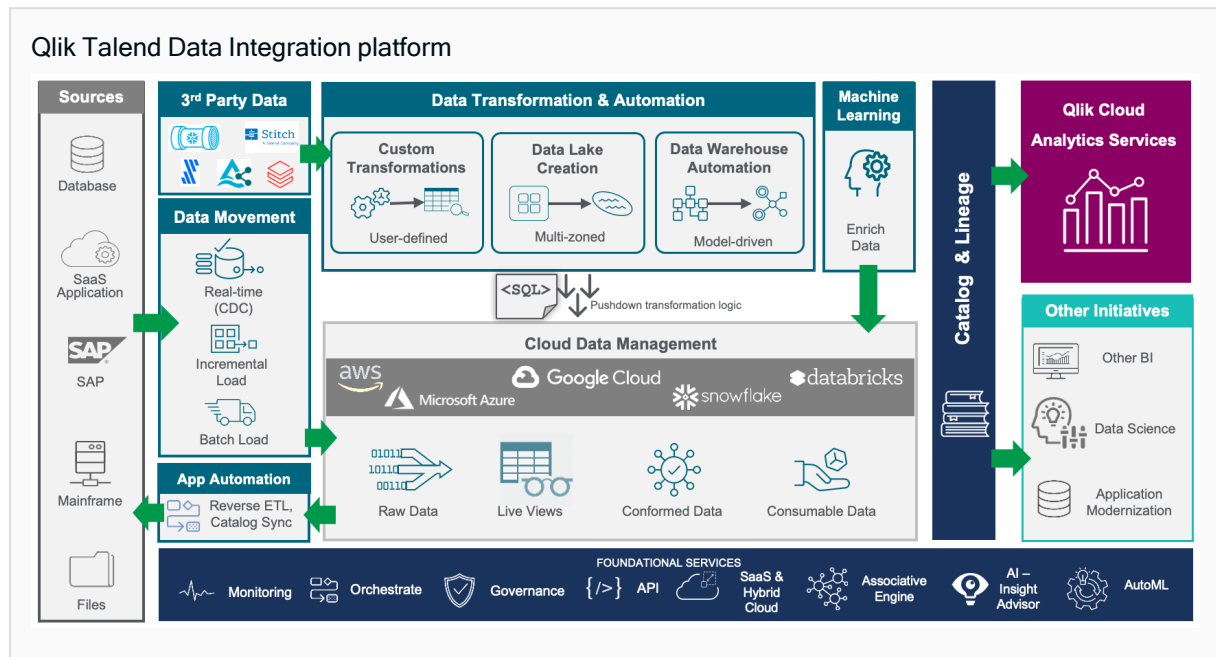
These services rely on the underlying platform services provided by the Qlik Cloud platform. For more information, see the Qlik Cloud platform Evaluation Guide.

2.2 Data pipeline

A data pipeline is an end-to-end process to move data from source to target, including any required transformations. A pipeline can be as simple as a straight mirroring of data from source to target, or as complex as a complete enterprise data warehouse solution including multiple data marts serving a diverse range of requirements.

A data pipeline takes your source data, often from multiple operational systems, and moves the data to where you need it. It transforms, merges, and validates the data into a consumption-ready format.

Data pipelines, ETL & other approaches

An ELT Process
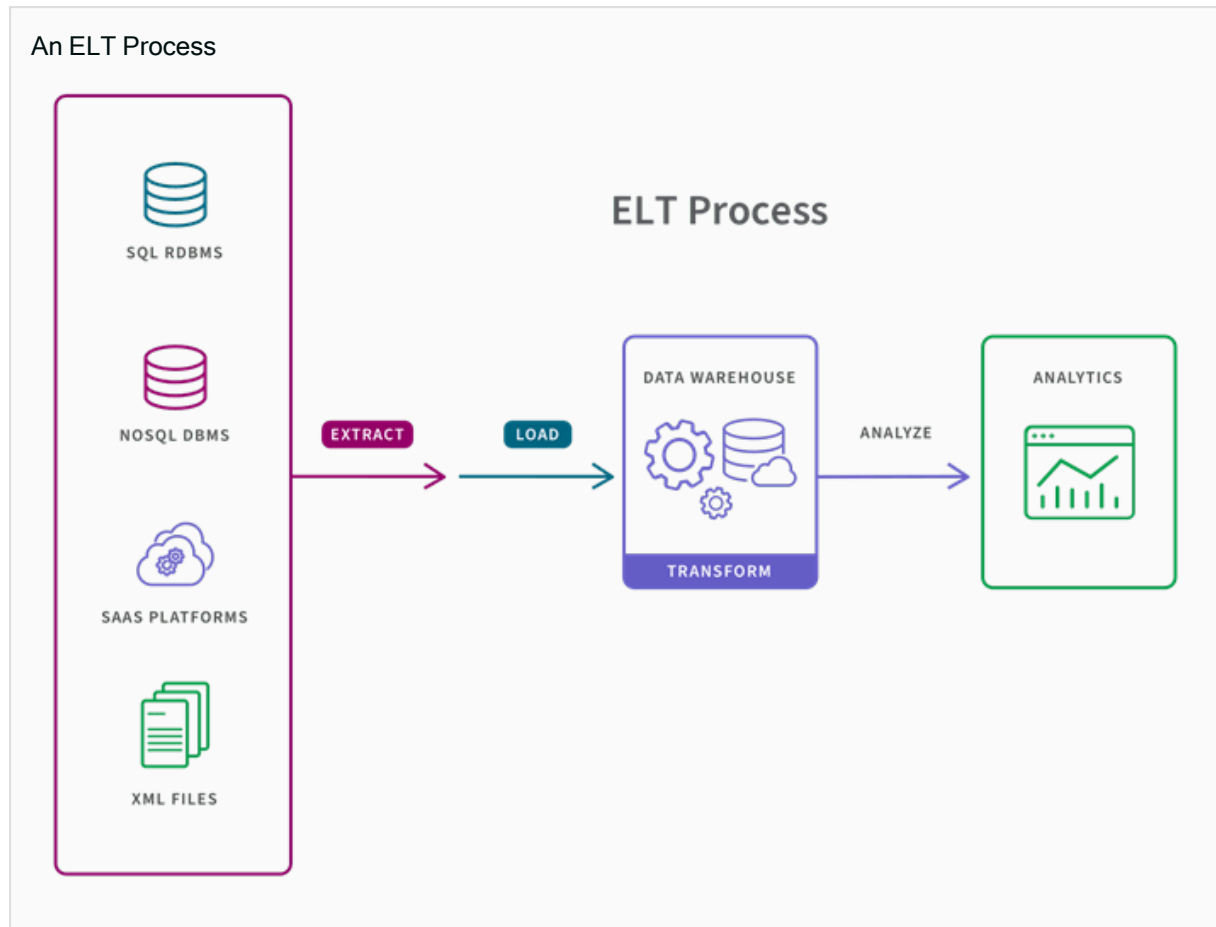
A data pipeline is a high-level concept. The actual implementation of the data pipeline will be based on one or more of the following techniques:

- **ETL**: *Extract, Transform & Load*. ETL is one of the oldest techniques in data movement and has been widely used since the 1970s. Data is extracted from the source system, then processing and transformation occurs within the ETL tool before the transformed data is loaded into the target system. Talend Studio is an example of a popular tool that supports developing ETL pipelines.
- **ELT**: *Extract, Load & Transform*: ELT is an alternative technique to ETL, where the data is loaded into the destination system before being transformed. SQL pushed down from the ELT tool performs the actual transformations, although this is usually transparent to the user and is generated by the ELT tool. ELT is generally seen as performing better due to this, however it is limited by the capabilities of the destination system. Qlik Talend Data Integration is largely based on ELT, however where necessary can use some ETL techniques.
- **Event Streams and Message Queues**: Both variants of the message broker architecture, these techniques deal with data that is in motion rather than read from in a static data source. Operations on these technologies cannot rely on having access to the full data set and often will process a subset rather than the full data set. These technologies are often used in combination with

traditional databases and will be integrated into a ETL/ELT based solution. Talend Studio is an example of a tool that supports transformations against these technologies.

Qlik understands that there is not a single type of data pipeline that meets every need and our focus in developing Qlik Talend Cloud is to provide solutions that meet our customers needs.

2.3 Data movement

Qlik Data Movement helps customers onboard their data rapidly and securely from their on-premise and cloud-based data sources to cloud data warehouses and data lakes. An end-to-end solution for data movement, this service securely accesses data sources, automatically replicates in real-time to cloud targets, and catalogs data sets without manual scripting.
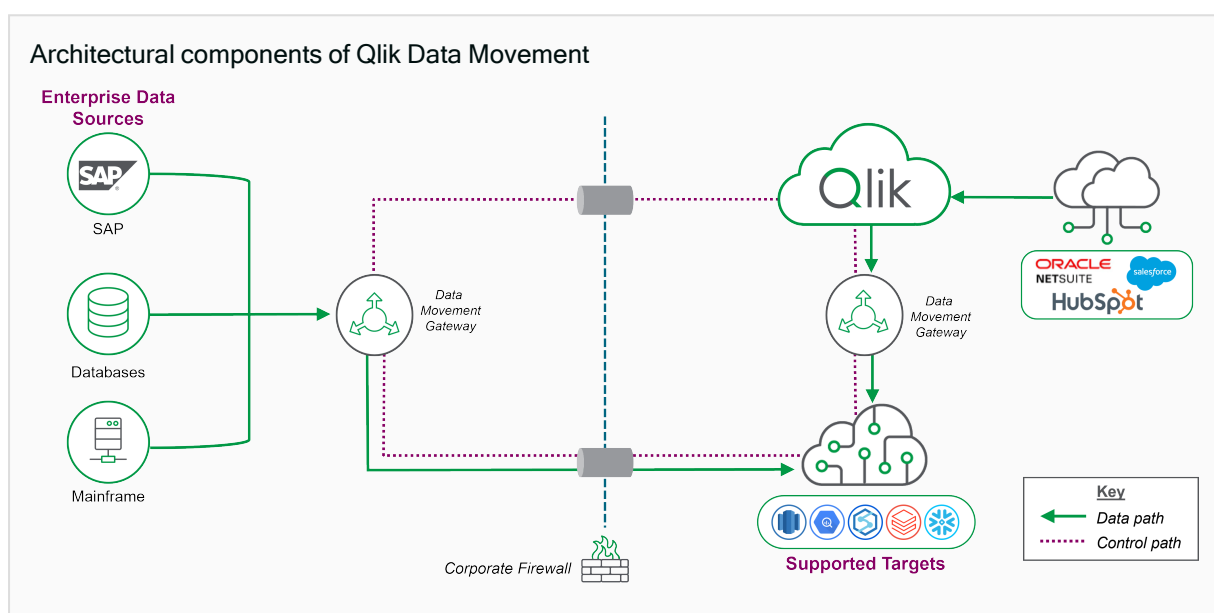
The data movement process in Qlik Talend Data Integration is managed from the Qlik Cloud hub. It initializes and monitors the process of capturing data from Enterprise and Cloud application data sources.

Data from on-premise systems or running in a customer's cloud does not pass through, nor is it stored, in Qlik Cloud, unless Qlik Cloud is the chosen destination for the data. SaaS application source data is captured by Qlik Cloud and stored transiently while data flows from source to target via Qlik Data Gateway - Data Movement. In the case of Cloud data sources, data can be pulled directly from the source without the need for a gateway.

> **ⓘ A note on Qlik Data Gateway - Direct Access** This document will not detail the functionality of Qlik Data Gateway - Direct Access. This gateway has a different purpose and helps solve different use cases than does the Qlik Data Gateway - Data Movement. The Direct Access gateway is considered a Qlik Cloud Analytics component, where users can connect directly to on-premise data sources from an app in Qlik Cloud Analytics and load data from there. It is not technically speaking a data integration tool, which means it will not be covered here.

Qlik Data Gateway - Data Movement

A challenge for many customers when moving to SaaS is providing access to their on-premise and private cloud data sources without compromising security. Qlik's solution to this is Qlik Data Gateway - Data Movement. This allows customers to access data sources in their data center and private cloud, without exposing them to the public internet.

Qlik Data Gateway - Data Movement is a component controlled from Qlik Cloud, but physically located near your data. It initiates connections to your source and target systems, orchestrating both full loads and change data capture (CDC). For simplicity we will refer to this simply as the Data Movement Gateway going forward.

Source data is onboarded directly into and persisted to the target cloud platform by the Qlik Data Movement Gateway, removing the need to expose data sources to the internet.

When started, the Data Movement Gateway makes an outbound connection to Qlik Cloud, which then initiates a reverse tunnel back to the gateway for command and control.

From on-premise to cloud data warehousing

Delivering data from on-premise data sources to cloud data warehouses is achieved with the Data Movement Gateway:

- **Source** – The data source types available in the Data Movement Gateway will govern the sources of data that can be delivered from. The sources are divided into two types:
  - Database sources: At the time of writing (April 2025) over 20 source database platforms were supported. see Connecting to databases in help for an up to date list of supported databases.
  - SaaS Sources: At the time of writing, over 100 SaaS applications were supported. See Supported SaaS applications in help.
- **Target** – Many target data warehouse platforms are supported by Qlik Talend Data Integration (see Connecting to cloud data platforms in your data projects in the help). Currently, those targets are:
  - Snowflake
  - Azure Synapse Analytics
  - Databricks
  - Google BigQuery
  - Amazon Redshift
  - Microsoft SQL Server

- Microsoft Fabric
- MySQL
- Oracle
- PostgreSQL
- Oracle

Both staging and storage will happen in the target system when data is delivered via the pipeline. It is possible to use targets in a private cloud; these connections will be proxied via the Data Movement Gateway.

Delivering your data to Qlik Cloud

You can deliver data from on-premise and cloud data sources directly to Qlik Cloud and store as QVD files (Qlik's proprietary file format, designed for fast loading into memory) with the Data Movement Gateway.

- **Source** – The data source types available in the Data Movement Gateway will govern what sources data can be delivered from. We are regularly adding new sources. See Data sources in the help for details on the latest available sources.
- **Target** – There are two options for target storage of these files, Qlik-managed storage and Customer-managed storage:
  - The Qlik-managed storage option requires customers to bring their own Amazon S3 bucket for the staging area. This storage is configured, maintained, and financed by the customer. Qlik will however provide storage for the storage area once the files have passed staging and are stored at rest. This is recommended if your goal is to make the data available for Qlik Cloud Analytics.
  - The Customer-managed storage option means the customer brings their own Amazon S3 bucket for both the staging area and the storage area, which means configuring, maintaining, and financing them. This is recommended if you need to make the data available to sources in addition to Qlik Cloud Analytics.

From cloud sources to cloud data warehouses or Qlik Cloud

Delivering data from cloud sources and storing it directly in cloud data warehouses is also possible with Qlik Talend Data Integration. This still requires the Data Movement Gateway for some scenarios. This allows us to support public and private cloud data warehouses and data lakes as source and target.

SaaS Data Loader

For Many SaaS platforms and some cloud database platforms, we are able to move data without a customer-deployed gateway. This SaaS data loading capability uses cloud-managed infrastructure and supports:

- Full and incremental loads
- No gateway or driver management required
- All third party SaaS targets
- Periodic Change Data Capture (frequency varies by edition, increasing in higher tiers)
- Data Movement only (no transformation or pipeline tasks)

Use-cases not covered in the above list require a data gateway to be deployed. The SaaS data loader capability is the only method supported in Starter edition of Qlik Talend Data Integration. For other editions this is supported in edition to the Data Gateway - Data Movement.

Data movement and persistence with SaaS applications

When using a data movement gateway with enterprise sources, data it transferred directly from server running the gateway to the target - the data is not stored within the Qlik Cloud tenant [1], it is sent by the gateway directly to the target. But what happens when connecting to SaaS applications?

In this case the data will temporarily be stored within the customer's tenant, secured with unique encryption keys (Customer managed keys if configured, otherwise Qlik generated tenant-unique encryption keys). This data is stored temporarily until it can be confirmed that it arrived to destination. After the confirmation, internal processes are executed on regular bases for clean-up operations. Data can be kept in the tenant's storage for at most 14 days, after that it is automatically deleted.

[1] - *If the setting "Viewing data in Data Integration" is enabled, a subset of data will be sent to the tenant to allow it to be viewed regardless of the source.*

Data Architecture patterns

A cloud data warehouse built by Qlik Talend Data Integration creates artifacts to support a number of key data warehousing patterns. These include:

- **Landing**: Landing contains an up-to-date copy of the raw data "landed" from your sources by the gateway. This could kept up to date using either CDC or full loads. The Landing zone is designed for internal use, not consumption, and Qlik recommends against using landing tables for any downstream tasks.
- **Storage**: Storage contains tables and external views based on the data in landing. When consuming data, the best practice is to use views which provide improved data concurrency.
- **Views**: Live views include data from change tables that are not yet applied to the current or prior tables. This lets you see data with lower latency and reduces the costs of processing requirements in the target platform. You can access both current data (ODS) and historical data (HDS) using live views. Depending on your project settings, the following views will be available:
  - Current view
  - Live view
  - Changes view
  - History view
  - History live view
- **Tables**: The following tables are created:
  - Current table (ODS): This table contains the replica of the data source updated with changes during the latest apply interval.
  - Prior table (HDS): This table contains type 2 historical data. It is only generated if History is enabled in the data task settings.
  - Changes table: This table contains all changes that are not yet applied to the current table. It is only generated if the landing mode Full load and CDC is used.

> **The benefits of delayed merge**
>
> In a cloud data warehouse architecture, data is not available for analysis until it has been physically loaded into the Data Warehouse or Data Mart. This is often an expensive (in terms of resources, if not costs) and time-consuming operation and may prevent the latency required by end users. Cloud data warehouses typically have multiple charge metrics including compute up-time, data scan and processing. This often leads to a trade-off between latency, cost and business need which can lead to the expense of running these loads regularly through the day.
>
> Qlik Talend Data Integration however provides an alternative solution for this challenge. The combination of delayed merge with the live views created by Qlik Talend Data Integration provides a solution which supports the best of both worlds; where a use-case demands real-time access, a live view provides this by joining the change tables with the prior loaded tables, for batch use cases they can use the current views which are highly performant. Delayed merge allows users to compress data changes at wider intervals while also providing an updated copy along with a full type 2 history.
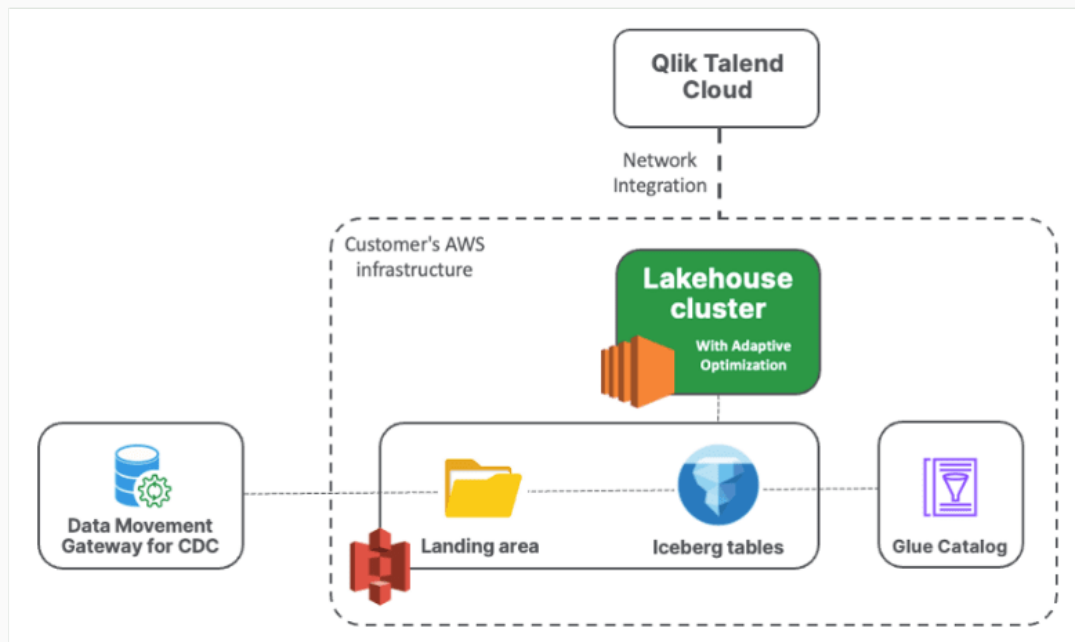
Qlik Open Lakehouse

The rise of open lakehouses based on Apache Iceberg marks a fundamental shift in how many organizations approach modern data architecture. By blending the scalability of data lakes with the reliability of data warehouses, open lakehouses deliver flexibility, governance, and performance – all while eliminating costly silos.

Qlik Open Lakehouse is a no-code, fully managed service within Qlik Cloud that provides a real-time data foundation for Apache Iceberg-based lakehouses, deployed in the customer's own AWS environment. It simplifies the ingestion of batch and streaming data from various sources into Iceberg, automatically optimizes data for performance using an adaptive Iceberg optimizer, and allows data to be queried by any engine (such as Snowflake, Athena, Spark, or Trino) with built-in governance, lineage, and data quality features. This open, platform-agnostic approach eliminates data duplication and bottlenecks, enabling AI and analytics workloads to run on trusted, real-time data at enterprise scale with reduced costs and engineering overhead

Qlik Open Lakehouse maps source schemas to target structures; resolves data type conflicts, supports rule-based data and metadata standardization, performs automatic file compactions, and handles updates and soft deletes as well as tracks SCD type 2 history - continuously with no manual intervention. Continuous monitoring and automated compaction, and cleanups of Iceberg tables deliver 2.5x-5x faster queries while reducing costs by up to 50%.

Qlik Open Lakehouse Architecture

Data never leaves a customer's private cloud. Qlik Open Lakehouse runs in the customer's own AWS cloud environment, which helps maintain data sovereignty, data security and governance - and leverages native AWS components, including EC2, S3, and Glue Catalog to deliver a simplified end-to-end experience.

Data projects

The first step to create a data pipeline in Qlik Talend Data Integration is to create a project. A project defines the use-case, source, and onboarding of the data. This is sufficient for a complete pipeline for some use cases. Qlik Talend Data Integration supports two use cases, Replication and Data Pipeline.

Replication

A data replication task uses change data capture (CDC) to efficiently and securely move data between a source and target system. Replication can be to an RDBMS, Data Lake, or Qlik Cloud target.
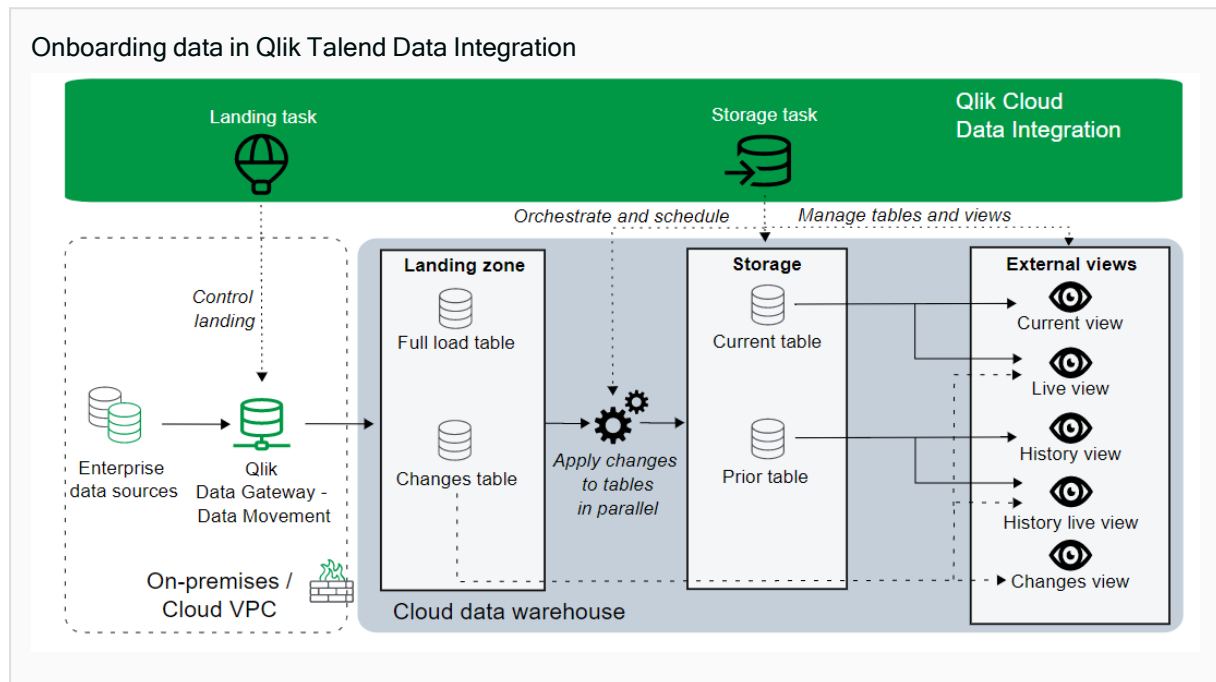
Data Pipeline

Data Pipeline projects allow you to modify and enrich the data, join disparate data sets, and transform the data into the formats you need such as Stay schemas or Data vaults. Data Pipelines can be created with our visual no-code designer, with custom SQL tasks, or created for you by generative AI.

Onboarding Data

The initial focus of a data project is the onboarding the data. This involves transferring the data continuously from the on-premise or cloud data source and generating datasets in read-optimized format. Onboarding involves two steps: landing and storing

- **Landing** – The data involves transferring the data continuously from the data source to a landing area, using a Landing data task.
- **Storing** – The data involves generating datasets based on the landing data, using a Storage data task.

Onboarding data in Qlik Talend Data Integration

Key Concepts in a data integration project

A data integration project is how we build, run, and monitor data pipelines.

| Concept	Relationship to project	Description
Data tasks	Component	Data tasks are a fit-for-purpose collection of tables or files and an associated operation on those files. It is the main unit of work within a project in the data project. Examples of data tasks include transform and data mart.
Data spaces	Dependency	Data spaces are governed areas of your Qlik Cloud tenant that are used to manage projects and their data assets. Access to a data space is determined by membership to the space. Access to projects and their data assets inside a data space is determined by roles assigned to members of the space. This means that a user

Concept	Relationship to project	Description
		must first be a member of the data space, and second, have the required roles to create, manage, or monitor data assets and resources in a data space. Members with the roles to consume data assets can also use data assets from a data space when building apps in personal, shared, and managed spaces.
Data Gateway	Dependency	Data Gateway is used by the landing data asset for associating a replication task with it, as well as for control and basic monitoring of this task.
Data connection	Dependency	A data connection is used by the storage data asset for connecting to AWS S3 buckets or cloud data warehouses, for the purpose of either reading from the staging area or writing to the customer-managed storage area.
Registered data	Component	Registered data is similar to a data task, however it does not perform and actions against the data directly. It is designed to expose data landed outside of Qlik Cloud to the data project, so it can then be used in the data pipeline.

2.4 Data transformation

The data transformation service in Qlik Talend Data Integration provides ELT capabilities to cloud data warehouses and data lakes. It is a key part of Qlik's vision to provide our customers with a raw-to-ready data pipeline.

Data pipelines in Qlik Talend Data Integration
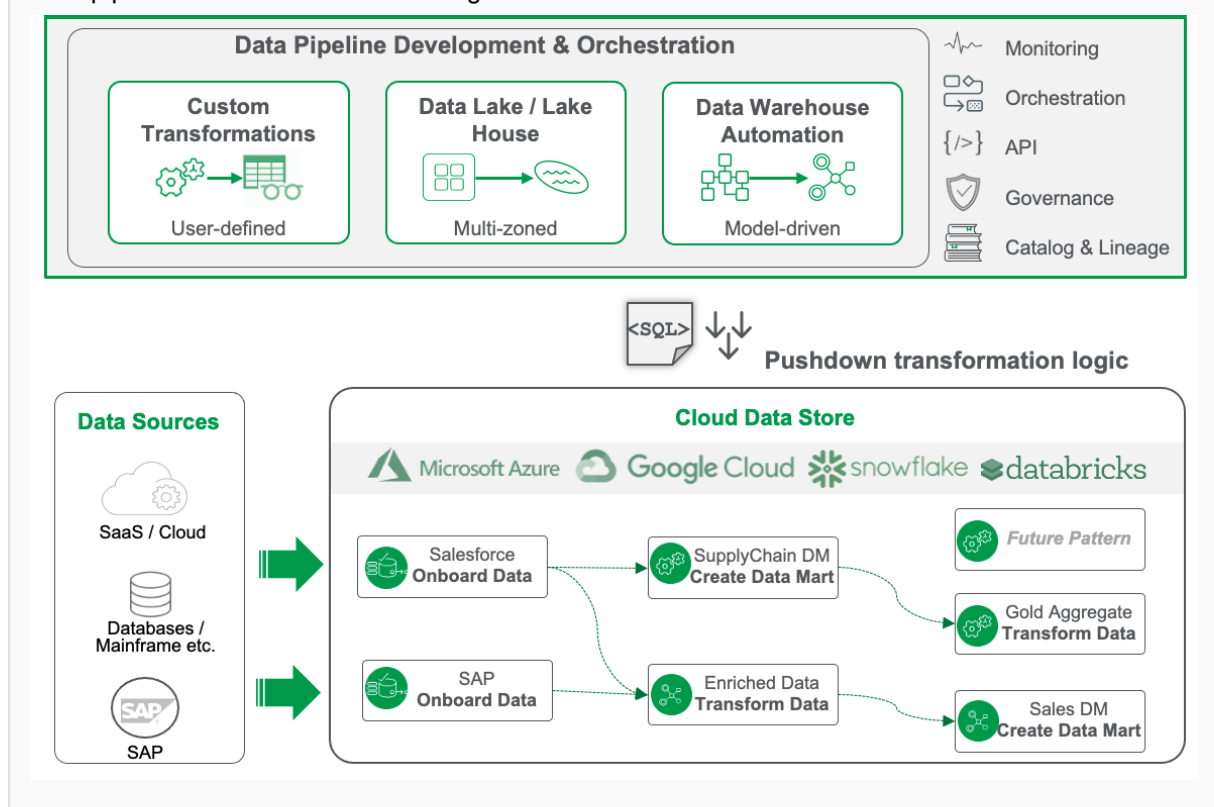
The data transformation service is:

- **Cloud-based:** Customers design, deploy, and monitor data pipelines in Qlik Cloud with transformations executed via SQL in popular cloud targets.
- **Flexible, template-driven approach:** Customers can define reusable transformations, set policies, and create custom design templates to simplify and accelerate the development of their data projects. Schema evolution is supported to remove the need to recreate pipelines and tasks as your source systems evolve.
- **Automated:** Automation of common methodologies and DataOps best practices allow customers to operationalize their transformation workloads quickly and reliably.
- **Integrated:** Pipeline tasks are integrated with the data movement service to transform data in near real-time to analytics-ready data in your target cloud platform.

The data transformation service contains the following functionality:

- Creation of flexible, fit-for-purpose data pipelines
- Rule-based, row-level transformations
- Creation of new derived objects based on:
  - Source to target mappings
  - Visual transformation designer

- AI-assisted transformations
- Custom SQL for more complex logic
- Automated generation of star schema data marts
- Defined logical relationships between data sets
- Choice to materialize data sets as tables or create as views
- CDC (change data capture) support for low latency and incremental data movement
- Push-down SQL execution to cloud DW platforms (Snowflake, Azure Synapse, Google BigQuery, Microsoft SQL Server)
- Version control integration
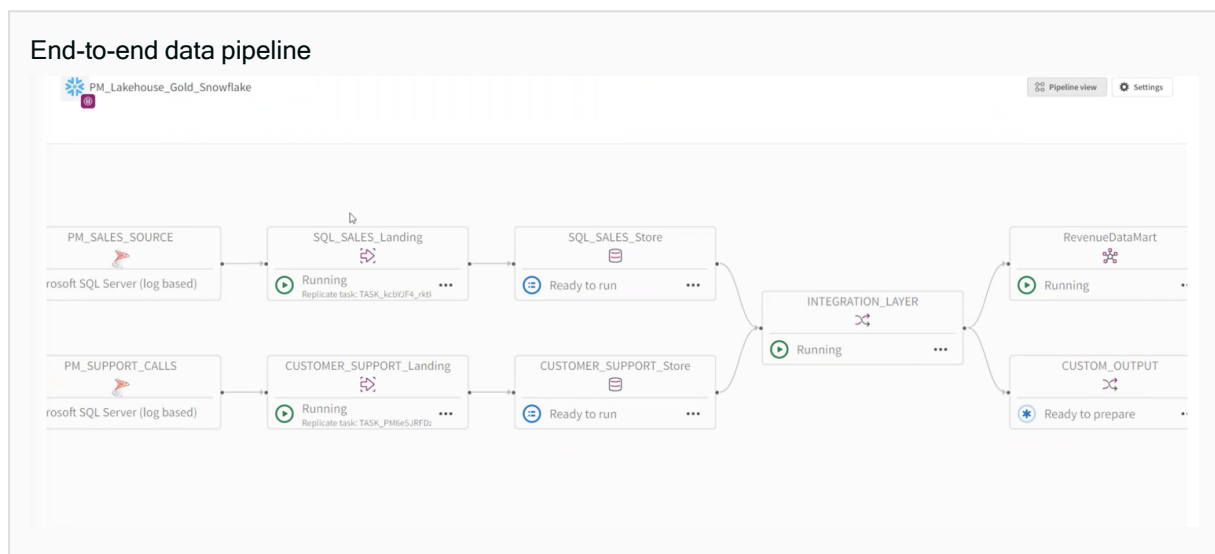
Visual transformations with transformation flows

The transformation flow designer allows you to create a transformation flow visually, using sources, processors, and targets to define complex or simple transformations. Processors allow you to perform common ELT operations in a visual no-code environment.

Flow processors allow you to perform common transformation tasks such as Joins, unions and aggregation, filtering and many more.

The transformation capabilities also offer advanced data cleansing capabilities. Businesses can identify and correct data quality issues such as missing values, duplicate entries, and inconsistencies. This helps ensure that their data is accurate and reliable, leading to better insights and decision-making.

If you need to do something that a visual transformation can't do, you can feed one transformation as a source to another, which could add advanced logic without to the need to hand-code all the logic.

| Flow processors		
Aggregate processor	Cleanse processor	Concatenate processor
Filter processor	Fork processor	Hash processor
Incremental filter processor	Join processor	Math processor
Numbers processor	Remove columns processor	Select columns processor
Strings processor	Union processor	
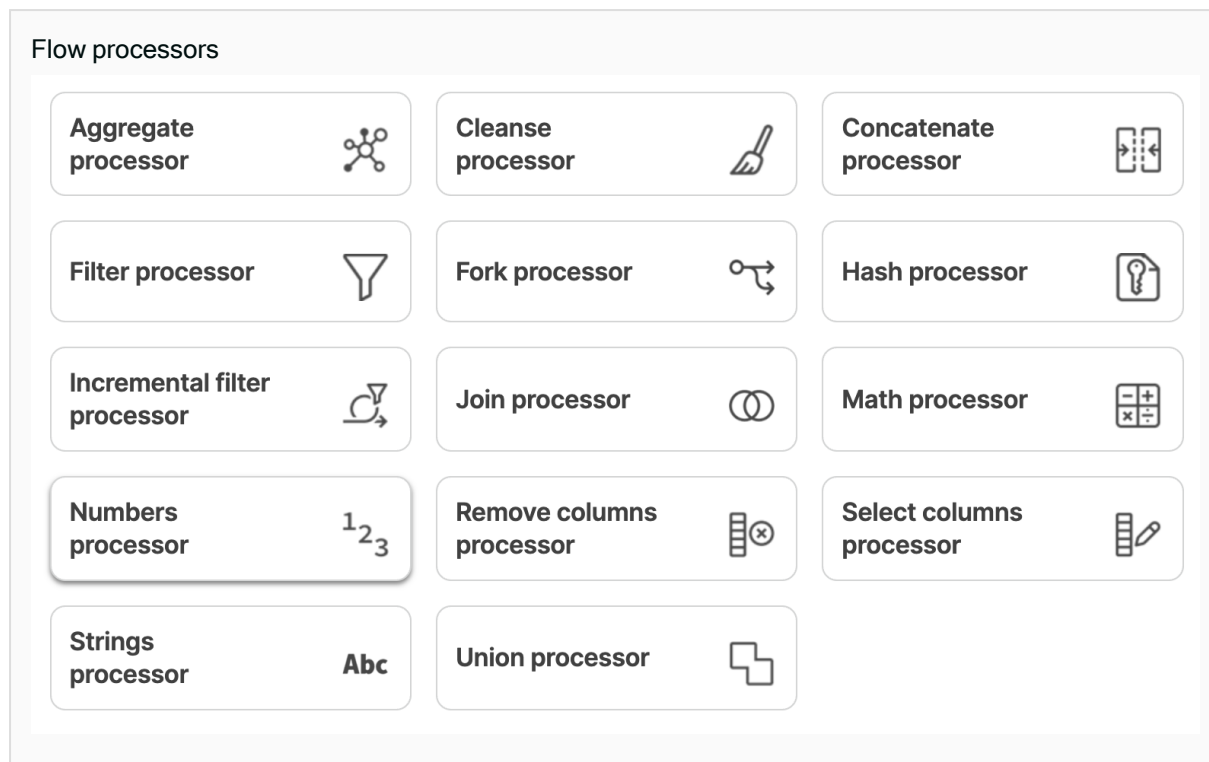
SQL transformations

Where you need to perform operations not supported by visual transformations, SQL transformations can be used. SQL transformations use select statements to transform the data into your required output. The SQL syntax is determined by the target platform, so exact functionality varies by platform.

AI-assisted SQL transformations

AI-assisted transformations use the metadata from your dataset, combined with your plain english request, to generate a SQL transformation with generative AI (Gen-AI). This feature is disabled by default and is dependent of the availability of Gen-AI features in your chosen region. You can then choose to use the generated transformation as-is, or modify it. It is important to review the generated SQL to ensure Gen-AI has correctly interpreted your request. AI-assisted transformations are aware of the underlying target so will generate SQL syntax specific to that target.

AI-assisted transformation
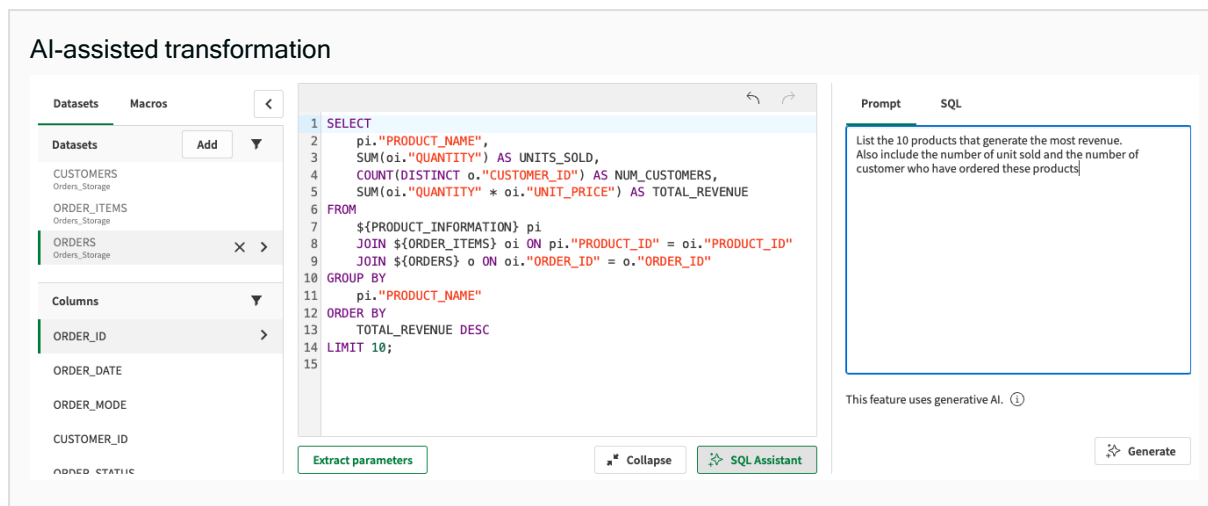
Third-party data transformation

Third-party data transformation in Qlik Talend Data Integration refers to the process of registering already existing data that has been landed in the chosen cloud platform by external tools (including Qlik Replicate and Talend Studio).

This means that customers can build workflows on top of and incorporate existing data into data pipelines without having to duplicate existing processes and consume the data twice. This includes to create transformation tasks, data cleansing, and data warehouse automation.

Use-cases for third party transformation include:

- A temporary process during migration from legacy tools to Qlik Talend Data Integration
- Leveraging an existing cloud data warehouse or data lake for a new requirement
- Allowing Qlik Talend Data Integration to work with a propriety solution where connectivity is not available

Third-party transformation supports key principles of Qlik: leave the data where it is, register it, understand it, make it qualitative, and start delivering it.

Integrating your data projects with Version Control

Qlik Talend Data Integration supports Integration between your data projects and Git for version control. This allows us to manage our data project life cycles in the same way we manage other development assets. For example we could have our production data project on the "Main" branch', and work on enhancements in a Dev version of our project on the Dev branch. Data connections are not stored in the git project; they are mapped to the project through bindings. This ensures projects pick up the right connection (e.g. Dev / Test / Production).

Orchestrating your Data Projects

While Qlik Talend Data Integration supports basic scheduling of most data tasks, customers sometimes need to integrate their data projects into their own workflows. To support this Qlik has released a set of REST APIs for Data Integration Projects to provide this integration with external workflows.

These APIs provide full control of Data Projects and their associated tasks and support many customer use-cases such as only running CDC at certain times, or disabling tasks during maintenance on sources and targets. It is also possible to create, import and delete projects, or change the project's configuration. Qlik will continue to expand API support for Qlik Talend Data Integration to support all customer use-cases.

Cross-project pipelines

There are times where the same logic may apply to multiple data sets. For example an organization that has multiple regional deployments of there systems may wish to re-use a pipeline to transform the data into an Enterprise Data Lake or Warehouse. To support these use-cases Qlik has introduced Cross-project pipelines. To leverage cross-project pipelines you must have Can Consume or greater access to the pipeline and the pipeline must be for the same data platform.
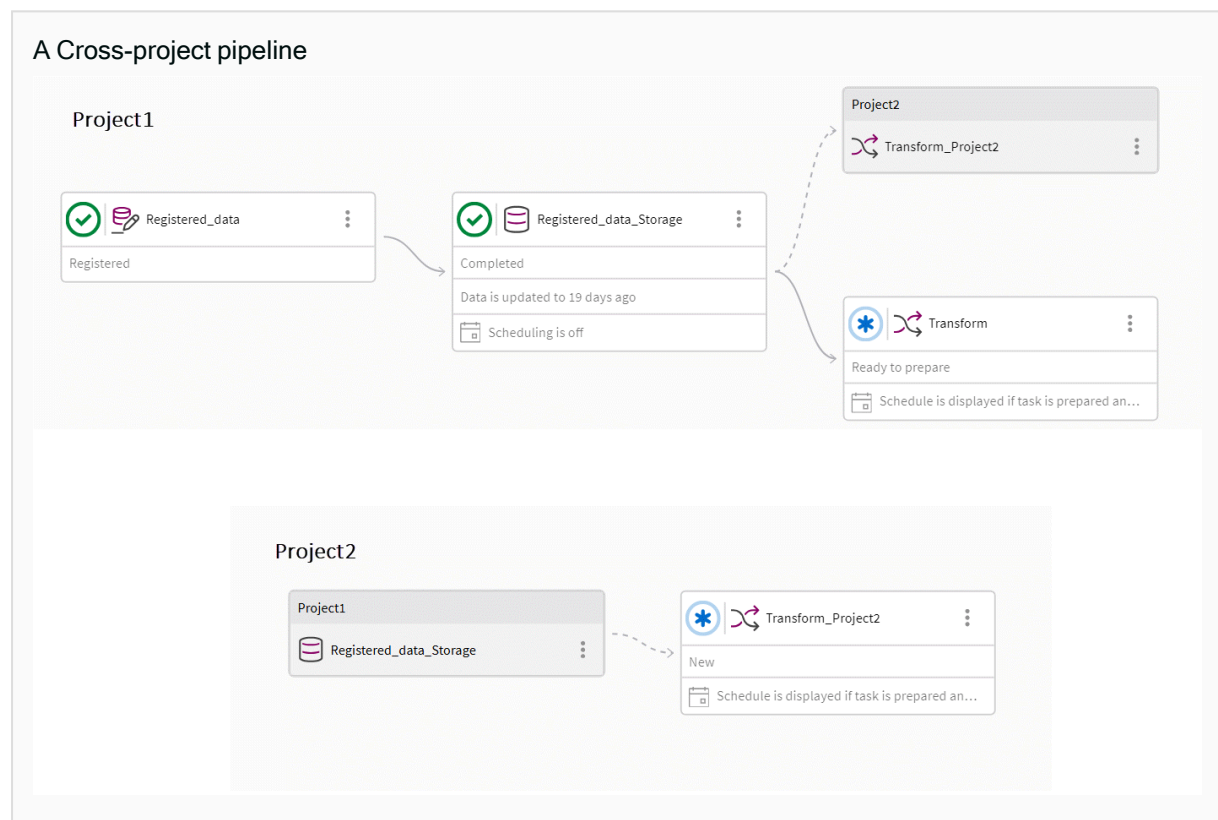
Knowledge Marts

Traditionally data transformation as a discipline has been focused on two key use-cases:

- Transforming data into a format suitable to be used in downstream operational systems
- Transforming data into a format suitable for Analytics & reporting

However the emergence of Generative AI has created demand for a new type of transformation, the transformation of data into formats suitable for storing in knowledge bases to be consumed by Gen-AI systems. There is a design and curation required along with the ability to ingest the different types of data (unstructured and structured) into the same vector store. Qlik has delivered new capabilities to meet these requirements, which we call Knowledge marts.

A Knowledge Mart is a collection of curated (designed, processed) documents that are

- **Domain-Specific** - Focused on a particular subject, industry, or use case
- **Curated & Structured** - Organizes knowledge to optimize search and retrieval.
- **Vectorized & Indexed** - Stores embeddings in a vector database for semantic search.
- **AI-Optimized** - Enables LLMs to retrieve relevant, contextualized data for better responses.
- **Incremental & Updatable** - refreshed with new knowledge incrementally

By building Knowledge mart functionality into our Data Integration solutions customers are able to leverage the skills and experience they already have for traditional data transformation use-cases and apply these to Generative AI use-cases.

2.5 Security and governance

A Qlik Talend Data Integration deployment is made up of three key components:

- Qlik Talend Data Integration
- Cloud storage:
    - File stores (e.g. S3)
    - data warehouse tables
- Data Gateway - Data Movement

There are several aspects of how we secure different data delivery strategies, which we will discuss here.

Connection and perimeter security

All the connections from on-premise to the cloud are outbound. This means there is no need to open any port through the corporate firewall, nor to provide a publicly resolvable IP address. The connection is initiated by the data movement gateway and promoted to a web socket secure (WSS) connection, which allows Qlik Cloud to send command and control to initiate the data synchronization. All data in transit is secured by the TLS 1.2 and 1.3 protocol. Command and control plane communication is additionally encrypted with a random channel key which is changed every time the gateway connects to Qlik Cloud.

Data storage

Qlik Talend Data Integration avoids storing data in Qlik Cloud where possible. When it is stored in the tenant, it is encrypted using the tenant's unique encryption keys (optionally using customer managed keys where configured). While Metadata is saved in the tenant's storage, data is only stored in Qlik Cloud if one

of the following is true:

1. Permanent data storage:
   - Qlik Cloud is the target platform.
2. Temporary caching of data:
   - Connection to source is direct (i.e. Data Movement gateway is not used).
   - Data preview is enabled - this caches a small sample of the tables.
   - SaaS connectors are used.

Qlik Cloud as a target

When choosing Qlik Cloud as the target, data from source systems can be stored either in Qlik-managed or customer-managed storage. In these workflows, the only time data is stored in Qlik Cloud is when choosing Qlik Cloud – Qlik-managed storage as the data platform (target) for a data project. This means that the landed data will reside in a Qlik data space encrypted with the customer's unique encryption keys. Customer must still provide a separate S3 storage area for the landing of the data (staging).

All other targets

If the data platform is any one of the cloud targets, such as Snowflake, Azure Synapse Analytics, Microsoft SQL Server, Databricks, or Google BigQuery, the data will be both staged and landed there, and never in Qlik Cloud.

The Data Movement Gateway's replication engine will directly push source data from on-premise / VPC source systems to the cloud target, only involving Qlik Cloud if the source is a SaaS application (or Qlik Cloud is the target) . The gateway manager will be responsible for metadata and command and control, but never data transfer.
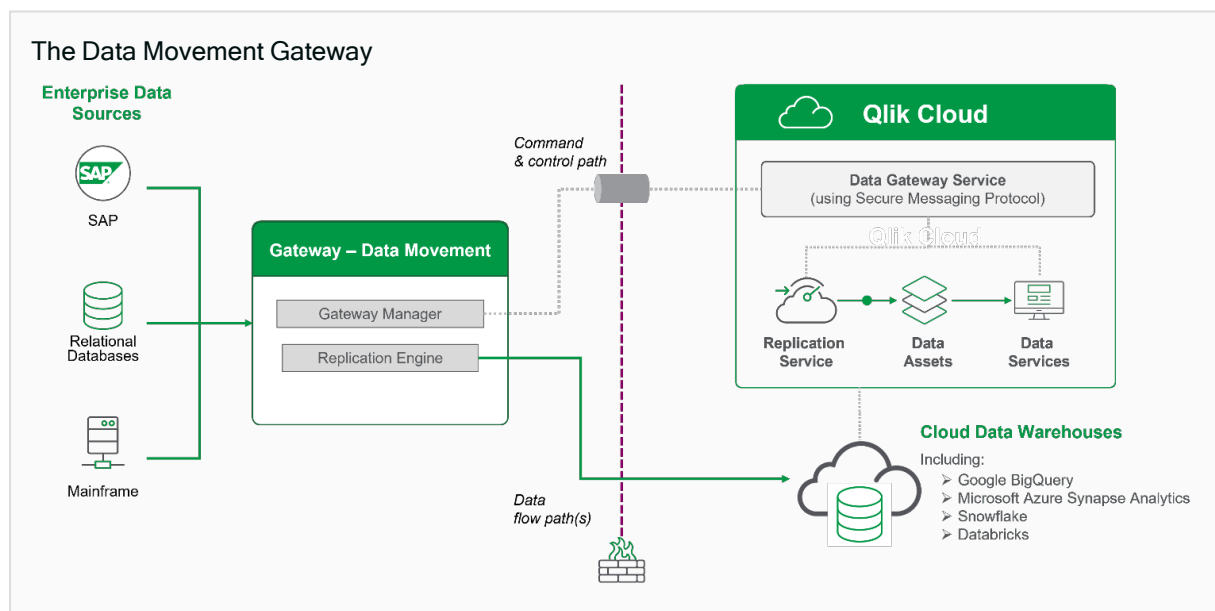
Generative AI

Some optional features of Qlik Talend Data Integration use generative AI. These features are disabled by default and it is up to each customer to decide if using these features meets the customer's policies. When using generative AI features in Qlik Talend Data Integration, a customer's metadata only will be sent to our generative AI shared services which operate within the same region as the customer's tenant. This communication is via a private network and at no time is this exposed to public endpoints. At no time is customer data sent to the generative AI services.

Metadata storage

Metadata about the data source and connections are stored in Qlik Talend Data Integration and are not persisted in the Data Movement Gateway. Metadata required to run a job is transferred securely to the gateway, but is kept in-memory and not persisted to the gateway server.

Data encryption

The Data Movement Gateway communicates with the source and target endpoints (typically databases) using either the vendor-provided client package or via a standard ODBC driver. For this reason, the Data Movement Gateway relies on the source/target endpoint's vendors for the in-transit encryption. While the majority of vendors all support encrypted connections, it is out of scope for this document to cover the specifics of other vendor software.

Databases are assumed to sit on a private high-secure network with limited access from other applications. The Data Movement Gateway requires access to the source databases. Data landing on the client-managed cloud storage can be encrypted using server-side encryption.

Qlik Cloud offers data at rest encrypted with the tenant private key or optionally with the customer's own managed keys. For more information about encryption, see the Qlik Cloud platform evaluation guide.

Service-to-service authentication and authorization

The Data Movement Gateway uses a JWT-based token to communicate with Qlik Cloud. Communication between the Data Movement Gateway and Qlik Cloud is always encrypted with TLS 1.2 or higher.

Client-managed cloud storage (S3 bucket) requires a key and secret and is subject to IAM control. This allows customers to set the read/write permissions for different buckets. See What is IAM? for more details.

User authentication and authorization

Authentication

Authentication of users on the Qlik Cloud platform is handled by the configured identity provider:

- Qlik Account – This is the default mechanism and is managed by Qlik. It provides a secure but basic authentication solution for customers, however is not configurable and does not integrate with a customer's existing solutions.
- Third party identity provider – Qlik Cloud supports configuring third party identity providers that support the OpenID Connect (OIDC) protocol.

For more information about authentication, see the Qlik Cloud platform evaluation guide.

Authorization

Users of Qlik Talend Data Integration are managed using the same role based access control system as is used for the rest of Qlik Cloud. The available space based roles are described in the following table:

Data space role	Summary
Is owner	Full permissions on the space including the ability to grant others access
Can view	Monitor, but not alter the data pipeline
Can consume	Consume data from data tasks in the data space
Can manage	Manage the space details and members
Can operate	View data tasks with basic details and perform actions, such as run, stop, and resume
Can edit	View and edit data tasks in this space, as well as create new data assets

In addition, there are several system-wide data integration roles available:

System role	Summary
Data Admin	Administrator with limited permissions to manage only data spaces
Data Product Manager	A user who can create data products
Data Space Creator	A user who can create data spaces
Data Services Contributor	A user who has access to Data Integration services

For more information about platform level authentication and authorization, see the Qlik Cloud platform evaluation guide.

2.6 Data Products

A data product is an entity that allows you to gather, and package trusted datasets related to the same domain, or any grouping that makes sense for your business. Data product teams can quickly produce high-quality, curated, domain-centric data assets, that can be easily accessed by data consumers and leveraged in several business use cases across the organization. Data Products build on top of and compliment existing dataset functionality.

The data product catalog in Qlik Talend Cloud offers several key capabilities to manage the data product lifecycle end-to-end:

- **Data marketplace**: This is where data products are readily available for data consumers to shop and leverage according to their use cases. Data consumers can get a preview of the data products, including quality information, descriptions, and relevant tags.

- **Data product quality and profiling**: Data Product Quality and profiles are calculated for entities in a Data Product. Depending on the Data source, this information will be calculated in the data source (push down) or within your Qlik Talend Data Integration tenant (pull-up).
- **Data product lineage and impact analysis**: This allows users to trace the origins and transformations of data products. Understanding where the data came from and how it changed along the data pipeline enhances data trust and brings more transparency for data consumers.
- **Integrated data catalog experience**: Providing an integrated experience means that data products can be composed of datasets that are registered in the Qlik Talend Data Integration catalog, streamlining the workflow for data product teams without requiring any additional tools.
- **Data product access control**: As in the rest of Qlik Cloud, user access is controlled through spaces. This simplifies access control for data products, emphasizing easy data sharing with data consumers within the Qlik Talend Data Integration environment.
- **Data product lifecycle management**: Lifecycle management enables data product teams to treat data products just like real products, composing them from relevant datasets, evaluating data quality, assigning ownership, managing data product attributes and publishing them for consumption. If a data product no longer meets business needs, it can be deactivated. The Data product manager role is required for this.
- **Data product consumption for Qlik Cloud Analytics**: Data products can be consumed directly by Qlik Sense apps. This allows data consumers to easily load data products into Qlik Sense applications, enabling a seamless transition from data discovery to actionable insights with just a few clicks.

Data Marketplace

The Data Marketplace is a central location within Qlik Talend Data Integration where Data products are both managed and available to consumers. It shows data products from all spaces the user is allowed to see. Data products are also available in the Catalog view, however less information about the data products are shown there.

The Data Products User Interface
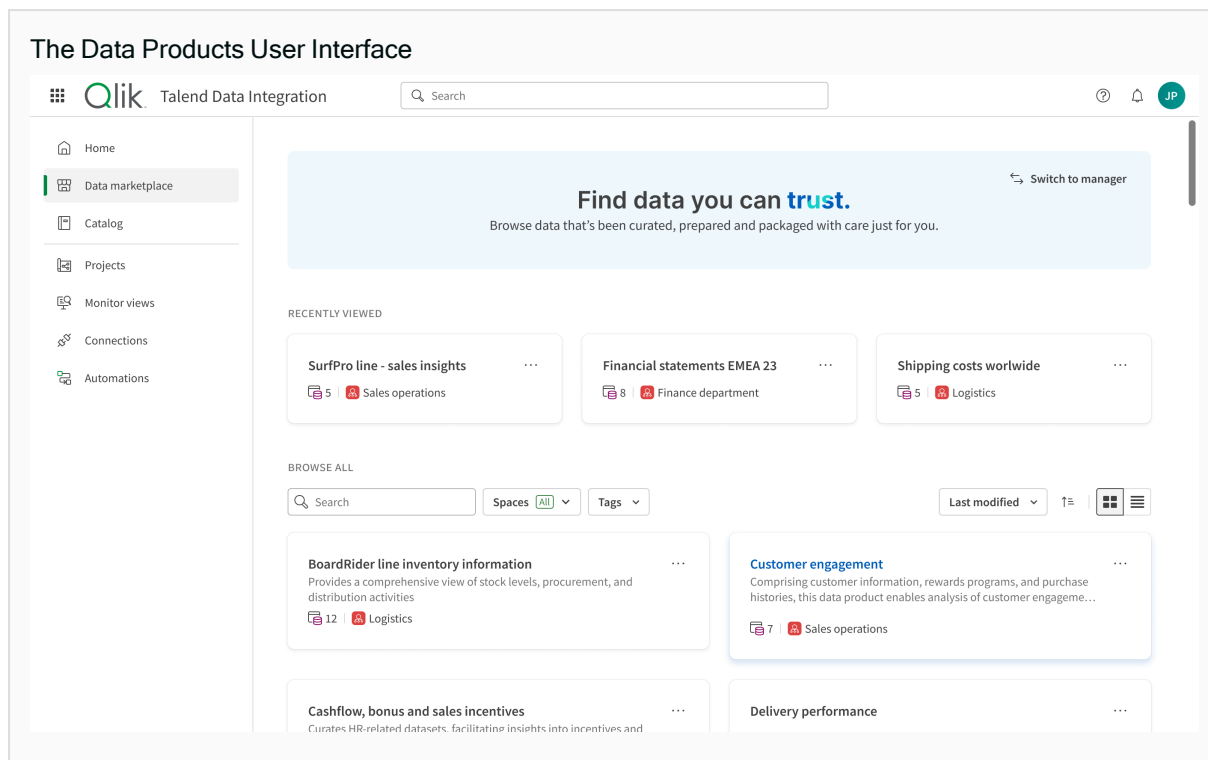
For a user to be able to consume data products they require the Can Consume role in the space that data product resides as well as access to the space where the datasets themselves reside. To create and manage Data products requires the Data product manager role.

When a user finds a Data product they are interested in, they are able to look at the datasets it contains, documentation on the data Product, relevant contacts in your organization for the data product and metadata about the datasets. If the data product meets the users needs, they can directly create an analytics app from it.

Ensuring data reliability with the Qlik Trust Score™

Data Quality is a major challenge for all data related projects. The success or failure of these initiatives often comes down to whether people believe the data is accurate. To help customers understand their data quality better, Qlik has introduced the **Qlik Trust Score™**. The trust score is based many factors grouped into four key areas:

- Validity, that takes into account the quality of the dataset itself, as well as the use of semantic types, and reflects the proportion of valid values across the dataset sample.
- Completeness, that depends on the number of empty records in the dataset sample.
- Discoverability, that takes into account the fact that this dataset is referenced in activated data products, and reflects how well-documented your dataset is. A well-documented dataset uses proper metadata such as descriptions or tags, both on the dataset itself and on the dataset fields.
- Usage, that shows how much your dataset is used across dependencies such as Analytics apps, data preparations, data flows, etc.

The factors making up the trust score can be configured to suite your needs. You can increase or decrease the priority of the various factors to calculate a score which reflects your priorities.

2.7 Qlik Automate

Qlik Automate is a no-code visual design tool for automating manual work. Instead of writing code, users combine configurable blocks that they drag and drop onto a canvas, forming a sequence of action steps from a variety of SaaS applications, including Qlik Cloud.

These steps run like a program to automate business processes, using analytics to direct the flow of data through a multitude of applications.

Automations can be executed manually, run on a schedule, listen to webhook events, and be triggered using an API endpoint. Automations are compiled into native code that runs in Kubernetes pods on Qlik Cloud to automatically provide the scalability you need to scale and automate your business processes.

Qlik Automate provides blocks to implement conditions, work with loops, use variables, and a wide range of other building blocks to implement automation flows.

Architecture

Qlik Automate is an integral part of Qlik Cloud and is available in a Qlik Cloud tenant alongside other capabilities such as analytics applications, connectivity to your data sources, and notes.

The elastic nature of the underlying technology allows Qlik Automate, as well as the other Qlik Cloud services, to scale horizontally as needed.

Qlik Automate shares access to common services, such as authentication services and file storage, to ensure an integrated experience with the other data analytics and data integration capabilities within Qlik Cloud.

For more information about the Qlik Cloud architecture, see the The Qlik Cloud platform technical paper evaluation guide.
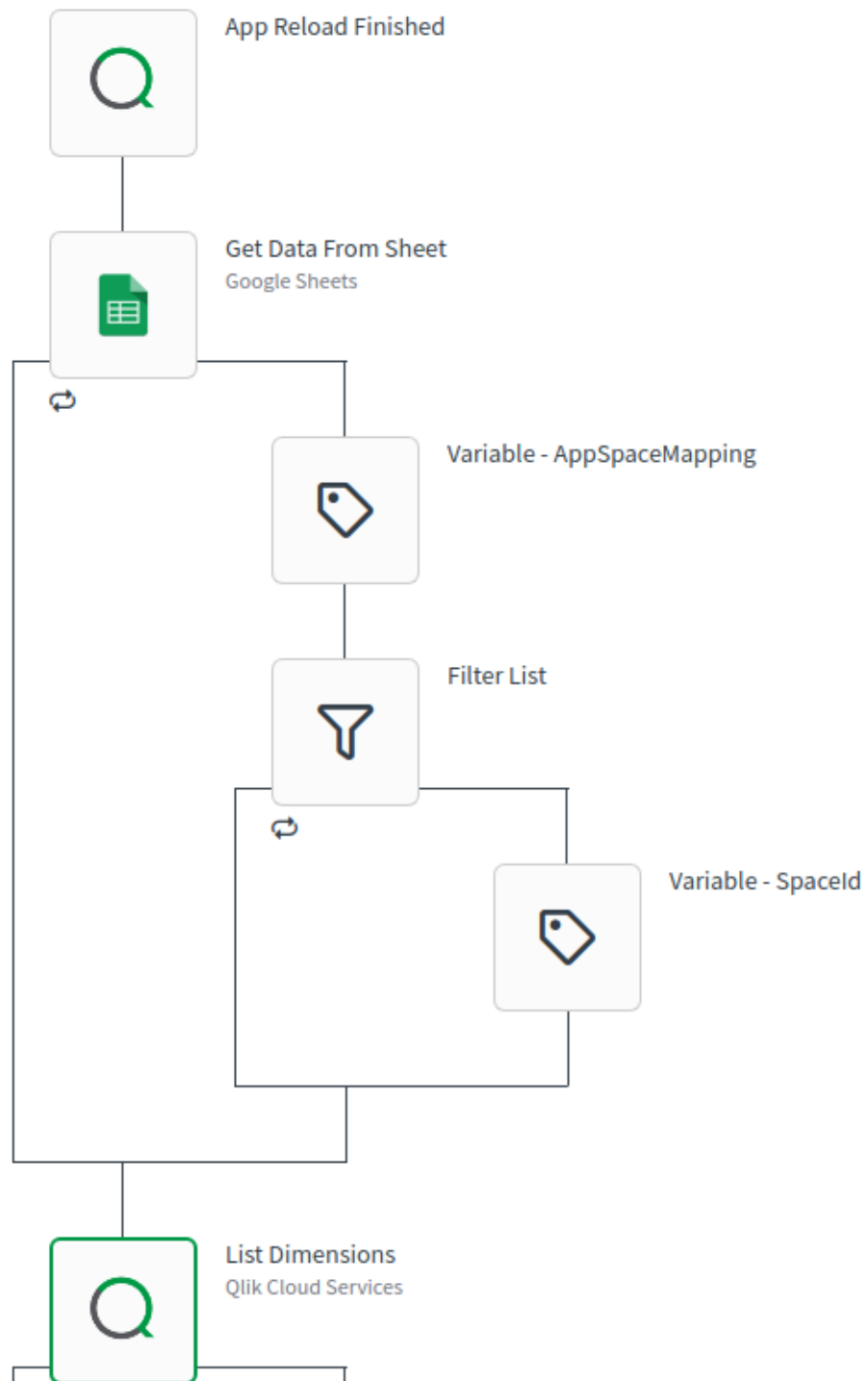
Reliability

As part of the Qlik Cloud platform, Qlik Automate is built on a resilient, autoscaling architecture to handle any customer workload. Qlik Automate is subject to the same uptime commitment policy reported in the [Service Level Agreement](#) (Section 7, point 7.2).
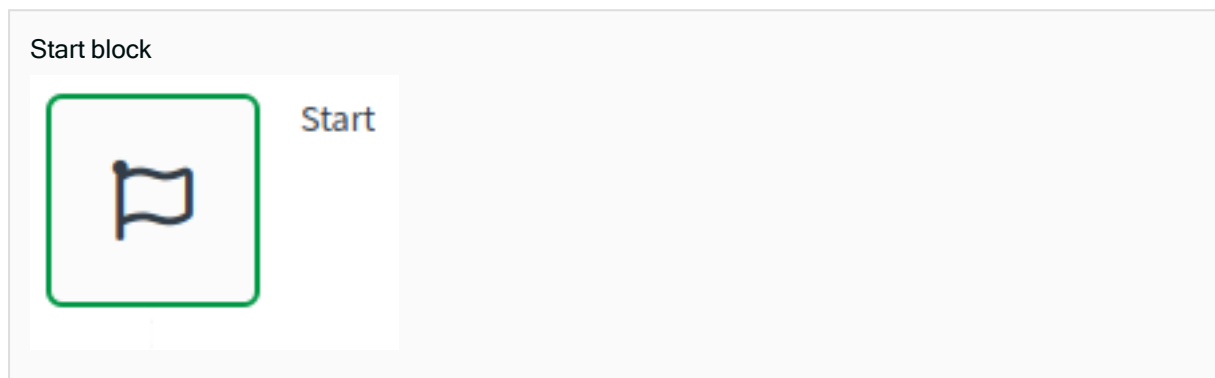
Automations

Blocks

Automations are made up of blocks

Every automation is made of different building blocks chained together to build a flow. There are three types of building blocks:
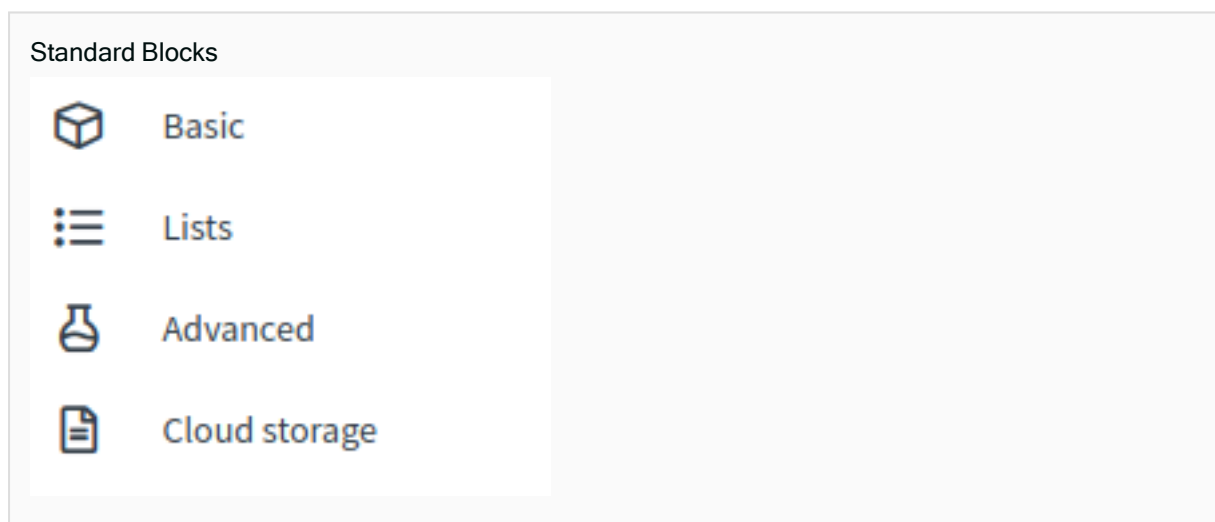
- Start block
- Standard blocks
- Connector blocks

Start blocks

Start block

The Start block is your starting point and mandatory in each automation. It is already present on the canvas and defines the start of the automation process; any other block in the automation must be connected to the start block chain.
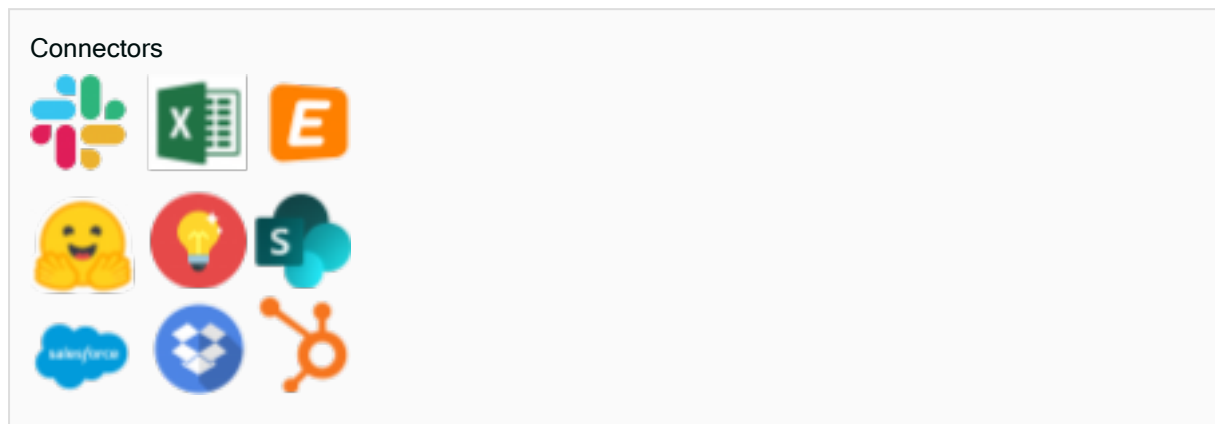
Standard blocks

Standard Blocks

Standard blocks fall into four categories: Basic, List, Advanced, and Cloud storage. Some example uses are:

- Loop over data and conditional block
- Working with variable and user input block

- Merge, filter, lookup or transform lists block

Connectors

Connectors

Qlik Automate offers a range of connectors. Connectors are the bridge between third-party applications and the automation itself. They can be used to get data from or write data to a third-party application.

There are too many connectors to cover them all here, and we regularly add new connectors to the platform. For information on all connectors available see Application Automation connectors in the help.
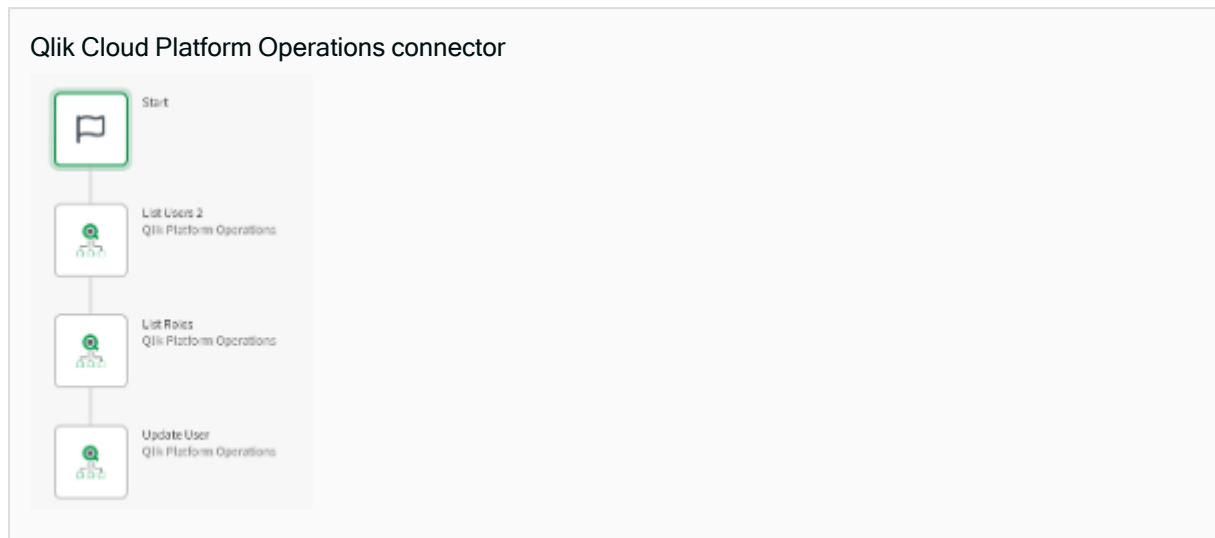
Qlik Cloud connectors

As well as connectors to other platforms and services, Qlik provides connectors to perform actions on Qlik Cloud itself. These cover the full life-cycle of Qlik Cloud from tenant provisioning to reporting.

Qlik Cloud Services connector

The Qlik Cloud Services connector

Qlik Cloud Services
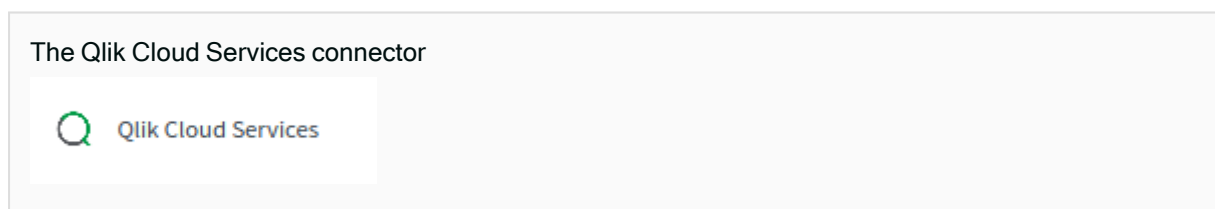
One connector of note is the Qlik Cloud Service connector, it allows the connection to the user's current tenant. It does not require authentication and comes with the same logged-in user's authorization.

Qlik Cloud Platform Operations connector

Qlik Cloud Platform Operations connector

The Qlik Cloud Platform Operations connector can orchestrate one or many Qlik Cloud tenants using either tenant or subscription OAuth clients.

Qlik Reporting services connector

Qlik Reporting services connector
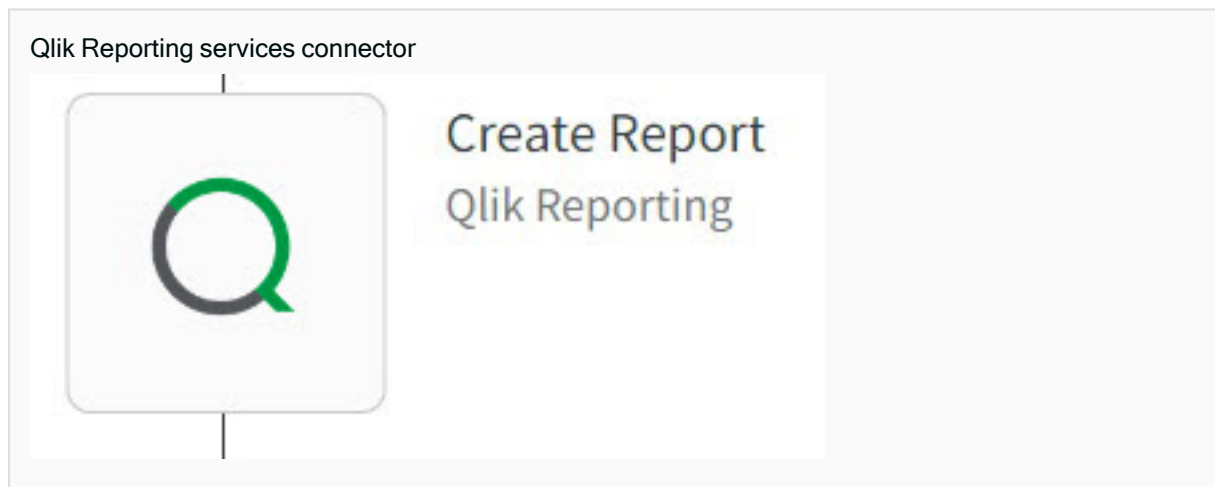
Qlik Reporting is a Qlik-native connector that lets you build customized, multi-page reports based on app sheets. Reports can be deliverer via e-mail as PDF or PowerPoint documents.

Run modes of automations

Automations are built by combining blocks that represent API endpoints of connected applications. Each Automation execution is called a job or run. Automations can be run either manually, or automatically. Manually an automation can be run either from he console, or directly within the automations editor.

Automations can be executed in three ways systematically:

- On a scheduled basis - from every 30 seconds, up until monthly.
- Triggered from an external webhook
- Exposed as an API Call

Use cases

Given the flexibility and wide range of connectors supported by Qlik Automate, several common types of use cases are possible:

- Operational automations in service of Qlik Cloud: Qlik Automate provides a direct visual access to various Qlik Cloud APIs to facilitate operations such as:
- Task chaining (e.g., Qlik Cloud Services app reloads)
- App versioning
- Assign licenses, roles, spaces, rights to users
- Alerting and messaging: send messages using e-mail, Slack, and MS Teams triggered by events
- Reverse ETL and write-back in business applications (such as CRM, SCM, ERP etc.) based on analytical insights

These use cases can be combined to create complex automations to support business processes, implemented in the same automation or by chaining different automations together.

Security model

Connector authorization and authentication

In general, connectors allow two types of authentication, and this is dependent on the third-party provider service:

- Access token authentication
- OAuth authentication

The access token authentication method requires users to provide an access token (e.g., API key or secret) to the third-party application and provide it in the connector settings.

With OAuth authorization, users are forwarded to the application login page which requires user permission access to grant access to Qlik Automate, on behalf of Qlik Cloud. If the user agrees, Qlik Automate will store and refresh the access token for accessing data in the automations.

Qlik Automate will request both read and write permissions in OAuth flows, due to the nature of the features.

Automation owners can export automation in a JSON file format and subsequently import them in a different tenant or share with other users on the same tenant. Authentication tokens are not part of the export; thus, the import requires a re-authentication of all the connectors involved in the automation.

Governance

The Qlik Cloud platform's management console allows any administrator to manage and govern all the automations. An administrator is entitled to list all the tenant's automations, and sort and filter them based on their name, status, last run, run mode, owner or completed time. Each automation can further show the list of executions and their states.

A Qlik Cloud administrator may enable or disable automations, change owner, or delete them.

Data privacy and compliance

An automation can make API calls to connected SaaS applications (e.g. Salesforce), retrieving data for processing within the automation. For example, a user could build an automation that fetches contacts/leads from their CRM and send it on to another SaaS application. Each automation job will have a history log that shows the API calls made by each block.

Where an automation processes personally identifiable information (PII), or other private data, part of this data will also be present in the history log of the automation. History logs can be viewed in the UI for each automation. History logs have a retention of 30 days and are automatically deleted afterwards. These logs are only visible to the automation owner and can not be viewed by other users or administrators.

In cases where there is a requirement not to log this type of data, it is possible to disable the logging of information on a per-block basis within the automation. This ensures this data in never written to the logs of the automation.

3 About Qlik Evaluation Guides

The content provided herein is provided for informational purposes. Due to Qlik Cloud's continuous release process, at times the content herein may differ from actual platform functionality. Please refer to Qlik Cloud Help for the product documentation for Qlik Cloud.

Any statement about future plans or intentions for the Qlik Cloud platform contained herein is not a commitment to deliver those features or functionalities, as the development, release, and timing of any features or functionality described for Qlik's products remain at our sole discretion.

For additional information regarding Qlik Cloud, please see Qlik Cloud or contact your Qlik representative.

3.1 Document history

This content has been developed to assist customers and prospective customers to understand and evaluate the Qlik Cloud platform and its related services. Traditionally this content has been published in document format only as a PDF; however, it is now primarily published as web content with PDF files available if required.

Over its history, this content has been known by the following names:

- Qlik Technical papers
- Qlik White papers
- Qlik Technical overview

This documentation supersedes the above documents.

3.2 Changelog

The PDF documents are generated from the evaluation guides at Qlik Help . The changelog for this evaluation guide is shown below.

Changelog – Qlik Talend Data Integration evaluation guide

October 2025

Data transformation

- Introducing Knowledge marts

Data Movement

- Qlik Open Lakehouse

February 2025

- Data products
- Cross-project pipelines

January 2025

Version Control
- Updated to cover GIT support for Data Projects

APIs
- Added coverage of the initial release of Data project REST APIs

Other updates
- Schema evolution
-

July 2024

Qlik Talend Data Integration
- Updated to reflect the name change from Qlik Cloud Data Integration to Qlik Talend Data Integration

July Updates
- Many updates to Data Transformations: SaaS Data Loader, Gen-AI

New Content
- Data Products

October 2023

October Updates
- Cloud sources in *Data movement*
- Minor updates

July 2023

Initial release to help.qlik.com
- Initial release

Qlik

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. Our cloud-based Qlik Active Intelligence Platform® delivers end-to-end, real-time data integration and analytics cloud solutions 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 does business in more than 100 countries and serves over 38,000 active customers around the world.

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