

How To Choose the Right Data Integration Strategy for Your Use Case



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01

INTRODUCTION

Here are five factors to consider when choosing the correct data integration method for your Ecommerce company:



ETL is the oldest and most popular data integration method, allowing you to move data from source systems to a destination system like a data warehouse for analysis. However, newer data integration methods such as ELT, Reverse ETL, CDC, and REST API can be just as effective as ETL.



Your chosen data integration method depends on your objectives and specific use case. For example, ETL might be the right option if you want to analyze unstructured data, while CDC could benefit your organization if you require real-time analytics.



You might want to use a combination of data integration techniques based on your use case. However, fewer resources and tools exist for ELT, Reverse ETL, CDC, and REST API than for ETL.



Regardless of the data integration method you choose, data engineers will often need to build complex data pipelines to facilitate the movement of data from one location to another.





Integrate.io is a data warehousing integration tool for Ecommerce retailers that automates ETL, ELT, Reverse ETL, CDC, and REST API (via DreamFactory), helping you move data between sources and target destinations with no/low code and no data engineering experience.

ETL, ELT, CDC... Sometimes, it feels like data integration is just a bunch of acronyms. There's little explanation of how these different integration techniques benefit your Ecommerce enterprise.

While ETL (Extract, Transform, Load) used to be the de facto method for harvesting data from disparate sources, other integration approaches might provide more value. ELT (Extract, Load, transfer), Reverse ETL, CDC

(change data capture), and REST API can be just as effective as ETL, if not more effective. It all depends on your particular use case.

In this white paper, Integrate.io explains when to use each of its data integration offerings based on a specific situation.

Integrate.io is a data warehousing integration platform built exclusively for Ecommerce. It offers ETL, ELT, Reverse ETL, fast CDC, and a REST API (via DreamFactory), helping you operationalize data based on your circumstances and business goals. Email hello@integrate.io for more information try the platform for yourself with a 14-day trial.

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WHAT IS ETL?

ETL is a data integration method that dates back to the 1970s.

It moves data from disparate sources to a centralized repository for business intelligence activities that benefit Ecommerce operations. For this data integration process to happen, data has to travel between systems and apps, which requires the creation of complex pipelines. Data engineers build these pipelines from scratch using code.

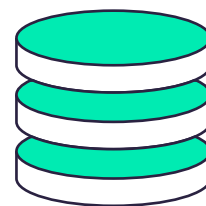
ETL involves three distinct stages: Extract, Transform, and Load.

EXTRACT

During the Extract phase of ETL, data engineers extract data from different systems and apps and place that data into a staging area. Engineers can extract data from different sources, such as:

- Transactional databases
- Relational databases
- Customer relationship management (CRM) systems
- Enterprise resource planning (ERP) systems
- Web pages
- Social media platforms
- SaaS tools
- SQL/NoSQL servers

Engineers locate and identify relevant data from a data source during the Extract phase and then transform that data into a suitable format for data analysis.



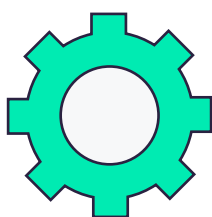
EXTRACT



TRANSFORM

The Transform stage of ETL involves data engineers cleansing, standardizing, deduplicating, sorting, and verifying extracted data. This process can be time-intensive as engineers ensure data conforms to data governance standards such as GDPR and CCPA.

Engineers also need to match data to the schema of the target repository that will hold that data. They might edit rows and column headers in raw data sets or format data into the correct tables. The ultimate goal of the Transform stage of ETL is to guarantee data is consistent, accessible, and high-quality. Failure to transform data correctly can result in errors during the Load stage.



TRANSFORM

LOAD

Load is the final step of the ETL process and involves data engineers moving data from the staging area to a repository like a data warehouse. There are two different ways engineers load data to a repository:

- Full loading happens when engineers move all transformed data to a repository.
- Incremental loading happens when engineers only move new and unique data to a repository.

Once data has reached a target system, Ecommerce companies like yours can push that data through business intelligence (BI) tools like Looker and Microsoft BI. These platforms generate real-time data analytics about Ecommerce processes and display insights on dashboards, reports, [heatmaps](#), and other data visualizations, improving decision-making and organizational productivity.

Read more: [17 Best Data Integration Platforms](#)



LOAD

03

WHEN TO USE ETL

Here are some use cases for ETL:

You Want a Simple Way to Integrate Data

As previously mentioned, ETL has been around since the 1970s, making it the oldest and most-used data integration method.

As a result, a whole ecosystem of ETL tools and techniques can support your data management objectives and make it easier to move data from a source to a target system.

ELT, Reverse ETL, and CDC are newer data integration methods, meaning fewer resources support these technologies.

Example

You are a small Ecommerce firm wanting to generate insights from customer data. If you have never invested in data integration before, ETL is a great starting point. You will find plenty of data engineers and tools that help you incorporate this technology into your organization.

You Want To Avoid Penalties for Data

Governance Non-Compliance

During ETL, data transformation occurs in a staging area before engineers move data to a third-party system like a warehouse (the Load stage). As engineers have already cleansed and verified data and checked for data governance violations, you can avoid penalties for non-compliance with legislation like GDPR and CCPA. ELT, on the other hand, can present data governance challenges, as data has already moved from a data source to a third-party repository when the Transform stage occurs.

Example

Your Ecommerce firm wants to perform data analysis but doesn't want to break data governance legislation when moving potentially sensitive customer data to an external system. The Transform stage of ELT ensures data remains compliant with the law before it enters a repository like a warehouse.

Read more: [Top 7 ETL Tools for 2022](#)

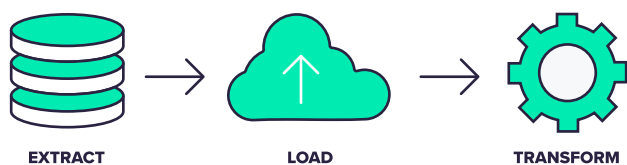
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ELT, EXPLAINED

ELT reverses the "Load" and "Transform" stages of ETL.

This data integration method is also beneficial for moving data from disparate sources to a target repository and removing data silos. Like ETL, ELT involves moving data between systems and apps through big data pipelines. Again, data engineers will need to create these pipelines using code.

ELT involves three stages: Extract, Load, and Transform.



EXTRACT

During the Extract phase of ELT, data engineers extract data from systems and apps and place the data into a staging area. This part of the process is the same as ETL, and engineers can extract data from transactional databases, relational databases, CRM systems, ERP systems, and other Ecommerce platforms.

LOAD

With ELT, the Load stage happens before the Transform stage.

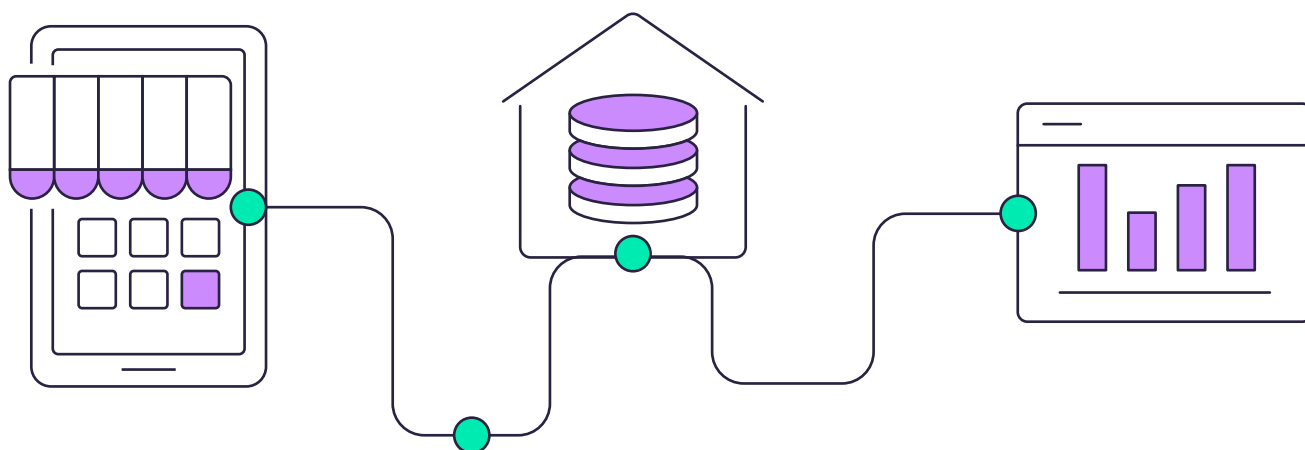
Engineers move data from the staging area to a repository like a data warehouse via full or incremental loading.



TRANSFORM

The rest of the ELT process happens inside the repository system. Engineers will cleanse, standardize, sort, verify, and deduplicate data to ensure it's in the correct format for data analysis. Just like with the Transform stage in ETL, engineers will also match data to the schema of the target repository holding that data. They might also edit rows and column headers and format data into the correct tables. The emphasis of the Transform stage in ELT is to ensure data quality and uniformity.

After engineers have transformed data within the repository, Ecommerce companies can run that data through BI tools like Tableau and Microsoft BI and generate real-time insights about their business.



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WHEN TO USE ELT

Here are some use cases for ELT:

You Want To Analyze Unstructured Data

ELT handles both structured and unstructured data. Ecommerce retailers often want to analyze large unstructured data sets that contain text, email, and social media files, making ELT the more appropriate data integration method for this objective.

ETL, on the other hand, is better suited for managing smaller structured data sets that need to undergo a complicated transformation process.

Example

Your Ecommerce company wants to learn which emails have the highest open and conversion rates. ELT lets you extract unstructured textual data from emails, load it to a target system, and transform the data into the correct format for data analysis.

You Want To Move Data to a Data Lake

Data lakes are large repositories that contain volumes of structured and unstructured data. Many Ecommerce retailers find these repositories to be more flexible than data warehouses, making them attractive target destinations. That's because data lakes manage data sets of various sizes.

ETL handles smaller, relational data sets that require complicated transformations. As a result, these data sets are better suited to data warehouses than data lakes.

Example

You have large amounts of data sets that consist of both structured and unstructured data. Moving data to a data lake might suit your business needs in this scenario because warehouses typically handle smaller, relational data sets.

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DEFINITION OF REVERSE ETL

ELT and ETL share a common goal: To move data to a centralized target system for analytics.

ELT and ETL share a common goal: To move data to a centralized target system for analytics. But what happens when Ecommerce retailers want to transfer data from a repository to another system or app?

Reverse ETL is a relatively new data integration method based on the concept of operational analytics—a type of analytics that improves existing business operations. It moves data from a repository like a warehouse and makes it available for teams in the tools they already use. For example, if sales reps are familiar with Salesforce, you can transfer data from a warehouse to Salesforce.

The goal of Reverse ETL is to improve operational analytics. When data exists in a warehouse and BI tools, some teams might

not be able to access that data or would rather view it in a system they are more comfortable with. By moving data from a warehouse into another system, you can improve productivity and make life easier for the people who work for your Ecommerce enterprise.

Like ETL and ELT, Reverse ETL involves three stages:

EXTRACT

Data engineers extract data from a centralized repository and place the data in a staging area using API pipelines. These engineers might extract data from a data warehouse such as Snowflake, Google BigQuery, or Amazon (AWS) Redshift.



TRANSFORM

Engineers standardize and verify data to ensure it's in the correct format for the new operational system (Salesforce, Zendesk, a particular CRM, a SaaS tool, etc.). Just like the Transform stages in ETL and ELT, engineers will also match data to the schema of the operational system and ensure data quality and uniformity. Errors can occur during the Load stage of Reverse ETL if engineers don't format data correctly.

LOAD

Finally, engineers move the transformed data from the staging area to the operational system. Now Ecommerce companies can access analytical data inside a third-party tool.



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WHEN TO USE REVERSE ETL

Here are some use cases for Reverse ETL:

Your Team Doesn't Know How To Use BI Tools

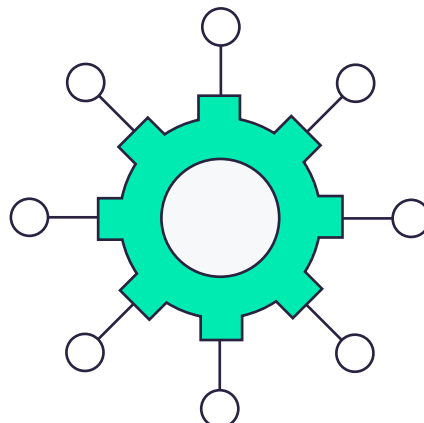
BI tools like Looker and Tableau provide your Ecommerce team with powerful data visualizations about every aspect of your organization, from the customer experience to inventory management. However, many BI tools require a steep learning curve or a particular skill set that some team members lack.

When moving data from a target system to an operational system, team members can view analytical data in their favorite or preferred applications. That can make it easier for teams to analyze data and identify patterns and trends in Ecommerce-related information. Data will still exist in your warehouse and BI tools for those

with advanced data science knowledge to operationalize; however, the same data will be available in business applications that your teams know and love.

Example

You decide to move customer data from Salesforce to a warehouse and run it through Microsoft BI, allowing you to view metrics such as average sales cycle length and open rates. However, some team members prefer to view those metrics inside Salesforce, not Microsoft BI. Reverse ETL will let you move analytical data from a warehouse to Salesforce.



Your Team Wants To Access Metrics in One Place

Teams that want to relay analytical information to customers, clients, suppliers, or investors might struggle to access data when using several systems. For example, customer data might exist in a CRM like Salesforce, while analytical data might live in one or two BI tools. Reverse ETL improves information access by keeping analytical data in an operational system, allowing teams to view metrics in one place without switching between different programs.

Example

A team member wants to communicate both customer data and sales analytics information to an investor over the phone. The team member has to switch between a CRM and a BI tool during the call, making communication difficult. Reverse ETL can move sales analytical information from a BI tool to a CRM, making life easier for the team member.

Read more: [5 Reverse ETL Best Practices to Future-Proof Your Modern Data Stack](#)



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HOW DOES CDC WORK?

CDC is a method that identifies any changes made to data inside a database.

It continuously processes data and identifies database events that occur, ensuring data synchronicity at all times.

With CDC, changes made to databases sync almost instantly, providing an alternative to the batch processing that occurs during conventional data integration methods.

While ETL and ETL sync data from a data source to a centralized repository, this synchronization process doesn't happen instantaneously, and data replication occurs

during specified timeframes. As a result, CDC provides Ecommerce companies with a way to continuously monitor changes made to a database and take action when unauthorized changes happen. Stream processing facilitates the CDC process and syncs data with a repository system such as a warehouse.

Like ETL and ELT, CDC enables Ecommerce retailers to push data through BI tools and generate insights about day-to-day activities.

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WHEN TO USE CDC

Here are some use cases for CDC:

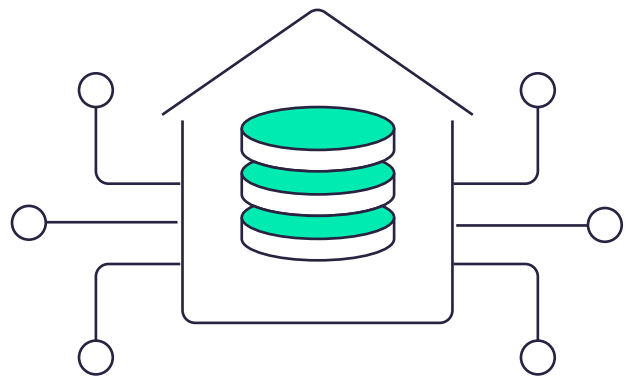
You Want to Conserve Network Resources

CDC uses stream processing to move data from one location to another, providing an alternative to conventional data integration methods that use batch processing like ETL. You won't have to worry about high load queries when using CDC because data flows to a repository throughout the day instead of at a specific time. That can help you conserve network resources and reduce architecture-related costs.

CDC also sends data to a repository in smaller batches than ETL and ELT, meaning you don't have to use as many network resources to facilitate data integration.

Example

You own a small Ecommerce firm and want to save network and data architecture costs. Choosing CDC over ETL or ELT could save you money because this data integration method sends data to a target system in small batches throughout the day rather than in a large batch overnight.



You Want to Generate Real-Time

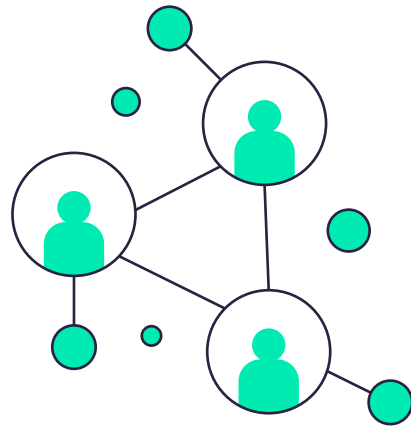
Ecommerce Insights

As ELT and ETL use batch processes, it can take time for a centralized repository to receive data and push it through BI tools—something called data latency. Many data engineers create pipelines that move data from a source to a target system overnight, meaning Ecommerce retailers can't view real-time data in BI tools until the next day.

CDC streams data continuously, meaning the data you view in a BI tool is fresh and up-to-date. That can make it easier to make business decisions and solve problems in a shorter timeframe. With the latest analytics, you can identify trends and patterns in Ecommerce data and stay one step ahead of your competition.

Example

Your Ecommerce company is launching a new marketing campaign today, and you want to determine its success as soon as possible. Because ETL and ELT use batch processing, where data typically moves from a source to a target system overnight, you might not receive campaign insights until tomorrow. CDC, on the other hand, lets you view data analytics in BI tools almost immediately.



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WHAT IS A REST API?

A REST API (or RESTful API) is a software architecture style that defines six constraints for how different systems in your Ecommerce organization communicate.

It establishes commands that data teams can use to receive data in an organized way.

The six constraints of a REST API are:

1. Client-Server: A REST API must have a separate client and server that develop individually from one another.
2. Stateless: A REST API must make calls independently, where each call contains the data required to complete itself. It has no "state."
3. Cache: A REST API should encourage the storage of cacheable data.
4. Uniform Interface: A REST API has a uniform interface that enables the application to develop without the app's services, actions, or models.

5. Layered System: A REST API must have various architecture levels working together to create an application.

6. Code-on-Demand: A REST API must transmit code or applets for use within the application.

REST can be more beneficial than SOAP and other API architectures because it's compatible with messaging formats such as XML, JSON, and XML.

DreamFactory, one of Integrate.io's platform's offerings, lets you generate a REST API and improve data integration in your Ecommerce enterprise. [Learn more.](#)

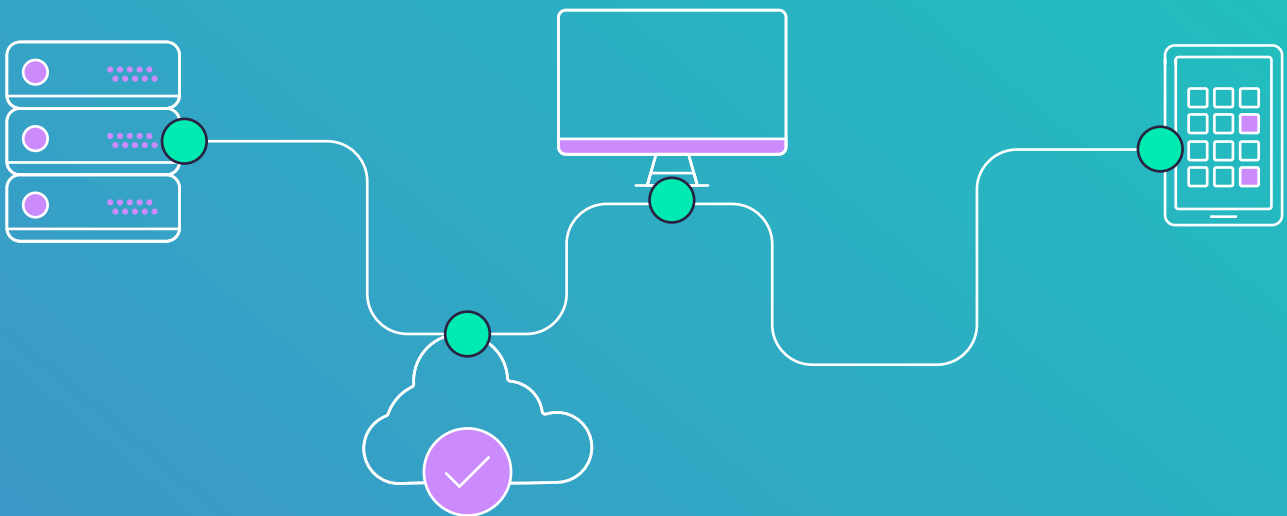
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WHEN TO USE A REST API

Here is a typical use case for REST APIs:

You Want to Streamline Development

Without APIs, developers would need to write individual communication protocols for each software tool they want to communicate with during the data integration process. That would be time-consuming and require complex engineering skills. A REST API allows different systems, applications, and services to "communicate" in the same format, reducing the complexities associated with development.



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HOW INTEGRATE.IO SIMPLIFIES ETL, ELT, REVERSE ETL, AND CDC

Whatever data integration method you use, data engineers and other professionals typically need to build complex big data pipelines from scratch, which can take months to complete.

Moreover, smaller Ecommerce companies might not have the money or resources to hire the right professionals, making data integration a challenging prospect.

Investing in a data warehousing integration solution like Integrate.io can solve these issues. This platform streamlines ETL, ELT, Reverse ETL, and CDC with no-code/low-code connectors and a drag-and-drop point-and-click user interface. You can also use DreamFactory's REST API to fulfill your data integration objectives.

Integrate.io removes the pain points associated with data integration by eliminating the need for big data pipelines and programming knowledge. By simplifying

the entire data integration lifecycle,

Ecommerce companies like yours can move data between locations for better analysis.

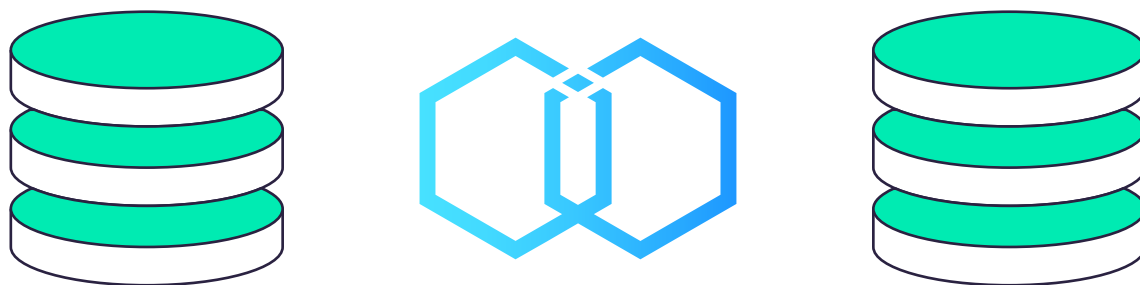
Integrate.io has a simple philosophy: To make ETL less of a chore.

While manual ETL requires the completion of complicated big data pipelines and workflows, Integrate.io simplifies the entire process, enabling all Ecommerce retailers to move data to a repository of their choice for analysis. You can find in-built connectors for data warehouses, including Snowflake, AWS Redshift, Google BigQuery, IBM Db2 Warehouse, and Azure Synapse Analytics.



Here are some other Integrate.io benefits:

- Contact an Integrate.io team member by phone, email, or live chat when troubleshooting a data integration issue.
- Get more value for money with a simple pricing model.
- Receive advanced data security and compliance features, including GDPR and HIPAA compliance.
- Integrate.io is one of the few data integration solutions that moves data from Salesforce to a warehouse and then back to Salesforce again.



Integrate.io is the data warehousing integration platform designed for Ecommerce retailers. Move data to a central repository (or operational system) with out-of-the-box connectors that enable ETL, ETL, Reverse ETL, and CDC. This no-code/low-code platform removes the jargon associated with data integration, helping you operationalize data, improve scalability, and reduce data silos.

[Schedule an intro call](#) now or email hello@integrate.io for more information.

We hope that you have enjoyed reading this whitepaper.

If so, be sure to [check out our other Whitepapers](#) related to "[How To Choose the Right Data Integration Strategy for Your Use Case](#)".

Interested in learning more about Integrate.io?

Chat with an Expert!

