Module 1: What and why Azure Data Factory?

- Service Components
- Integration Runtimes
- Source Control

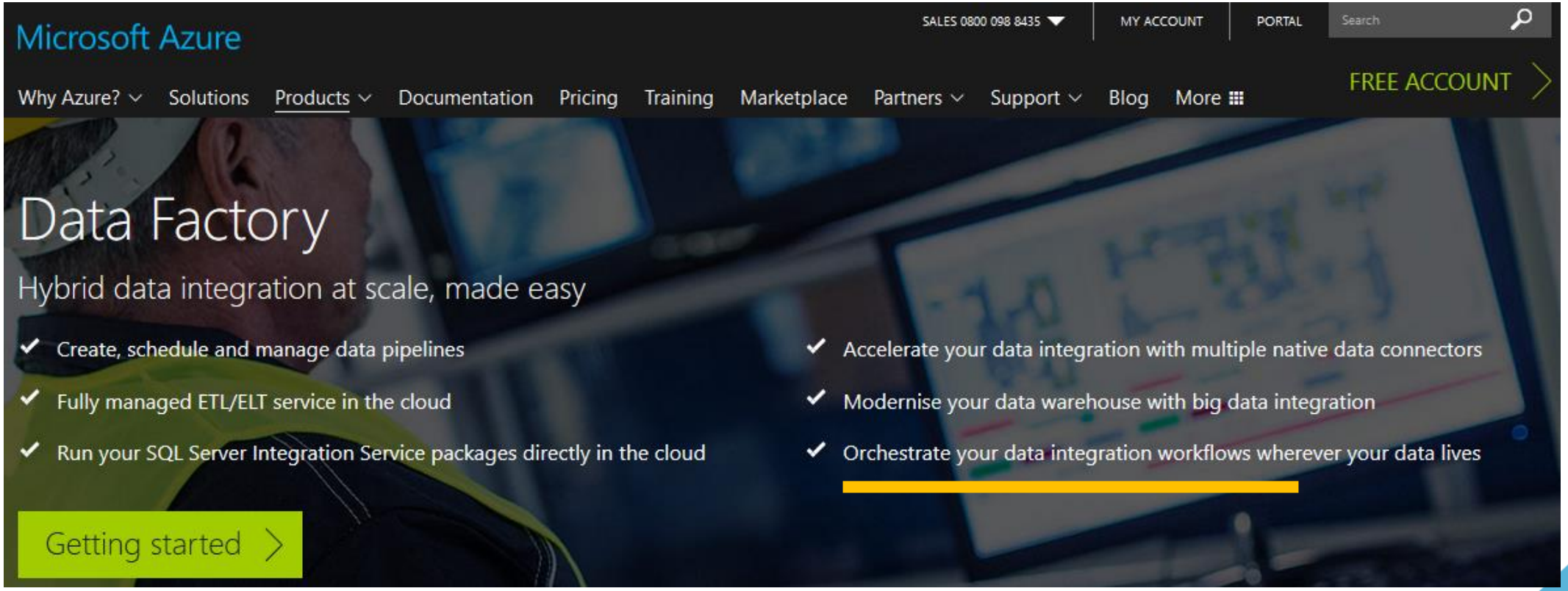
What is Azure Data Factory?

The History of Azure Data Factory

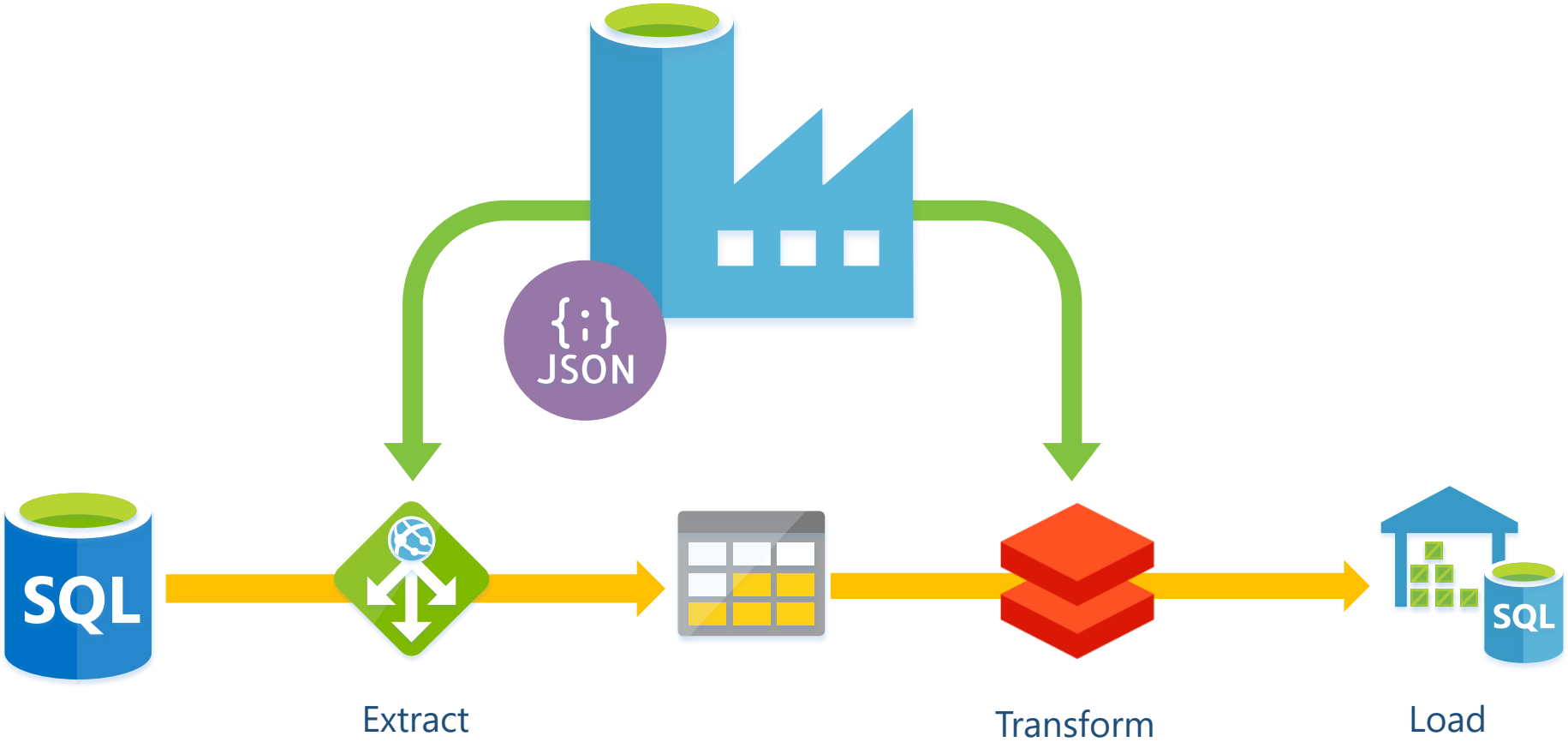
Azure Data Factory is SQL Server Integration Services in the cloud.

What is Azure Data Factory?

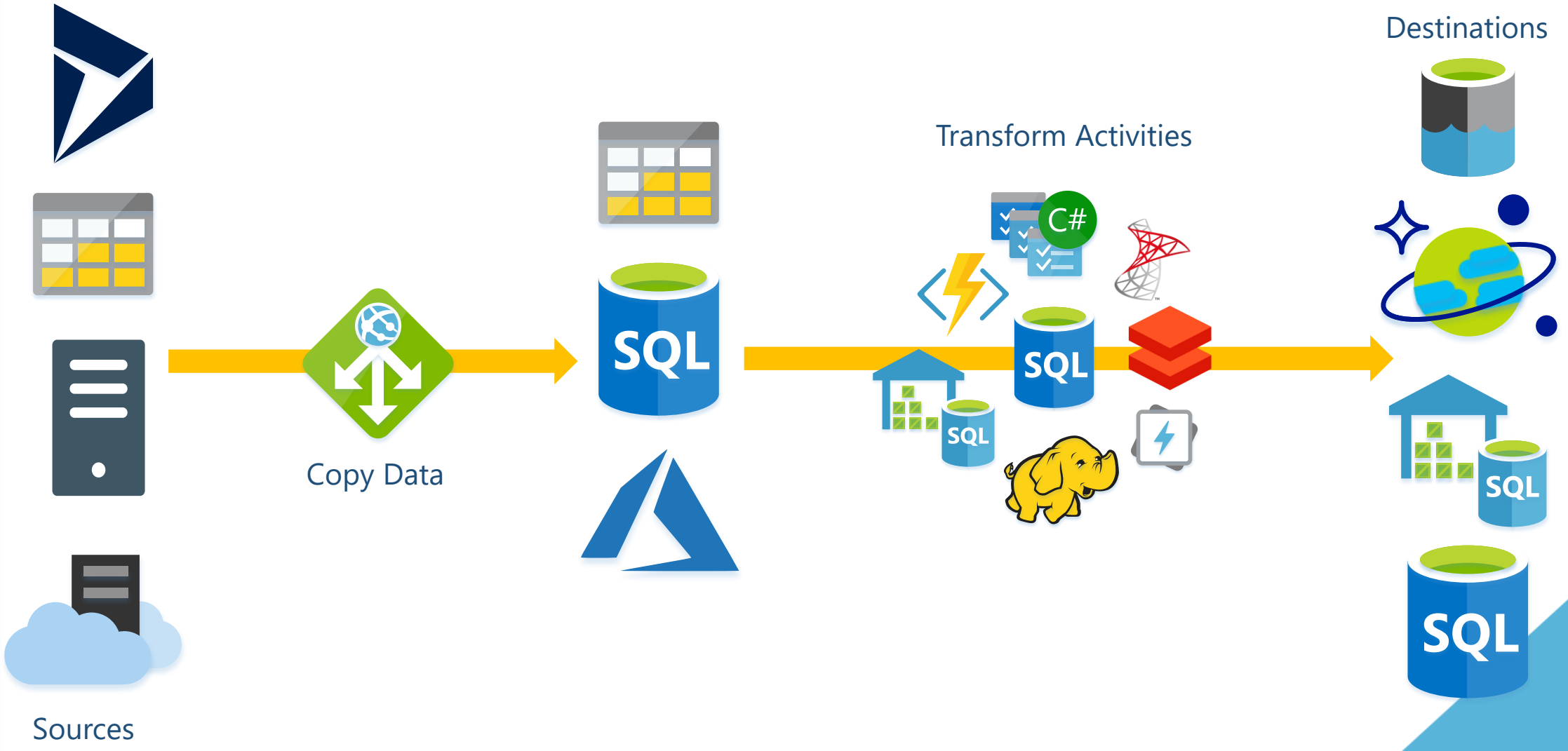
https://azure.microsoft.com/en-gb/services/data-factory/



What is Azure Data Factory?

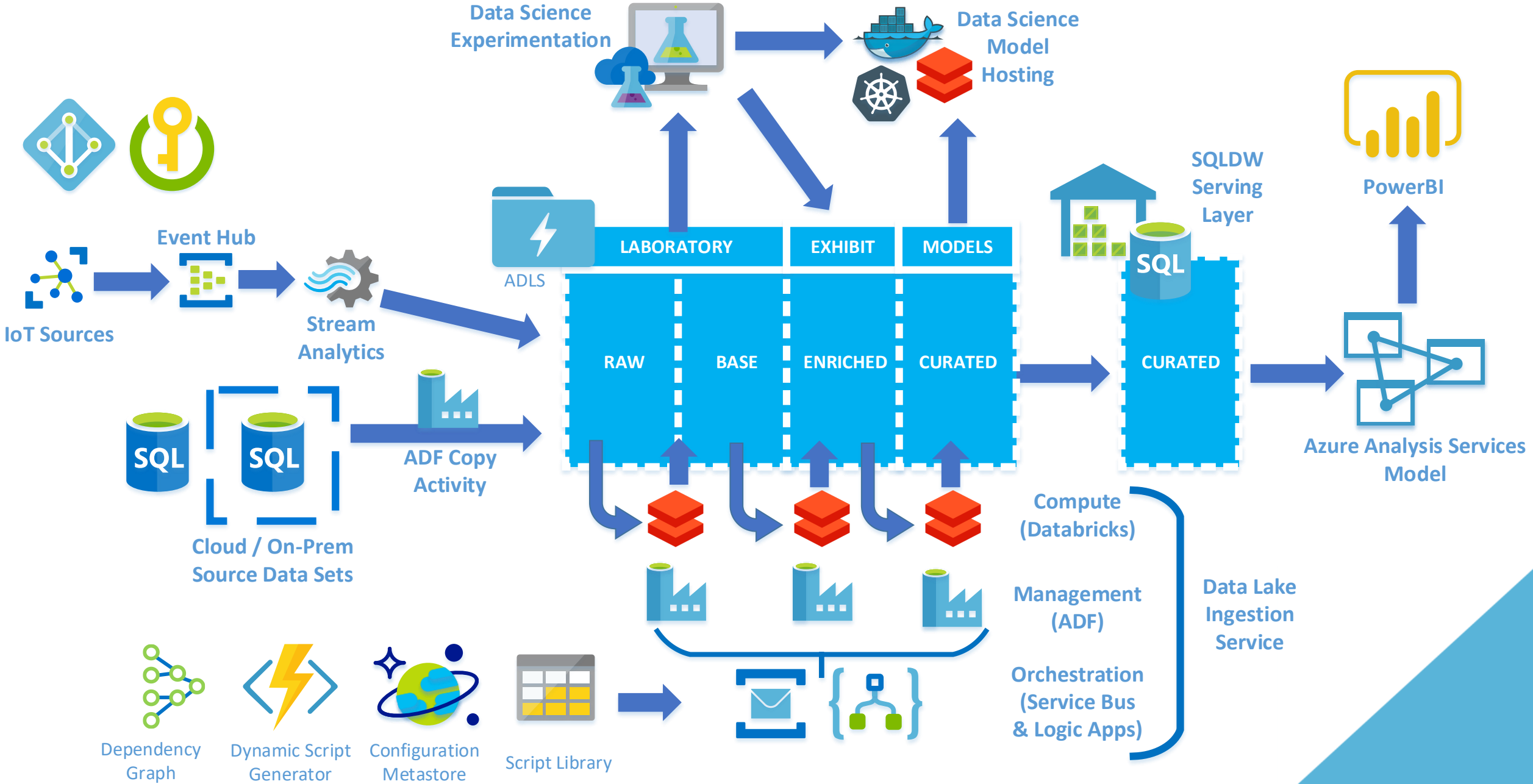


What does Azure Data Factory do?



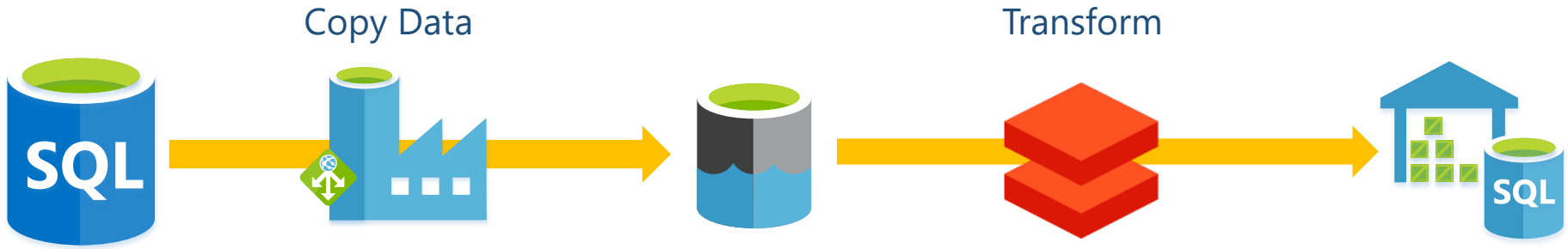
Why use it?

The Modern Data Warehouse



Service Components

Data Factory Components



1 **Linked Services** – How do I connect?

Like the SSIS Connection Manager!

SQLDBLinkedService

ConnectionString: *Server=MyServer;Database=myDataBase*
UserName: "MrPaulAndrew"
Password: **********

Data Factory Components

1 **Linked Services –**

Amazon Marketplace Web Service (Preview) | Amazon Redshift | Amazon S3 | HDFS | HTTP | Hive | Netezza | ODBC | OData | Azure Batch | Azure Data Lake Analytics | Azure Databricks

Apache Impala (Preview) | Azure Blob Storage | Azure Cosmos DB (MongoDB API) | HubSpot (Preview) | Informix | Jira (Preview) | Office 365 (Preview) | Oracle | Oracle Eloqua (Preview) | Azure Function | Azure HDInsight | Azure ML

Azure Cosmos DB (SQL API) | Azure Data Explorer (Kusto) | Azure Data Lake Storage Gen1 | Magento (Preview) | MariaDB | Marketo (Preview) | Oracle Responsys (Preview) | Oracle Service Cloud (Preview) | Paypal (Preview) | ServiceNow | Shopify (Preview) | Spark

Azure Data Lake Storage Gen2 (Preview) | Azure Database for MariaDB | Azure Database for MySQL | Microsoft Access | MongoDB | MySQL | Phoenix | PostgreSQL | Presto (Preview) | Square (Preview) | Sybase | Teradata

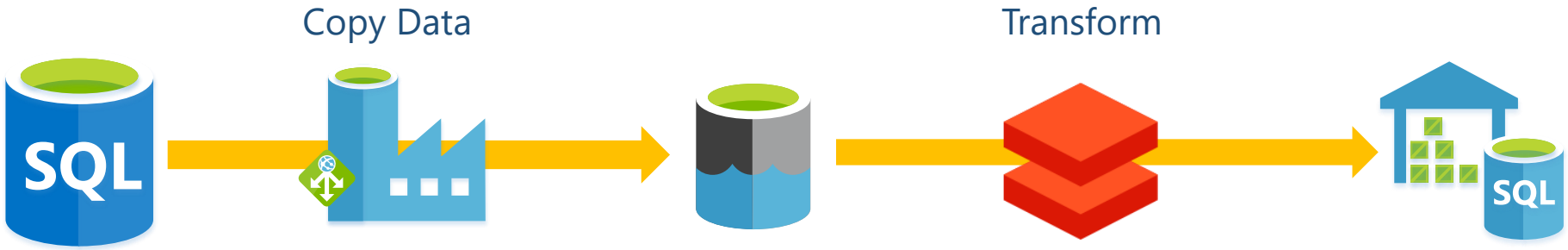
Azure Database for PostgreSQL | Azure File Storage | Azure Key Vault | DB2 | Drill (Preview) | Dynamics 365 | QuickBooks (Preview) | REST | SAP BW Open Hub | Vertica | Web Table | Xero (Preview)

Azure SQL Data Warehouse | Azure SQL Database | Azure SQL Database Managed Instance | Dynamics AX (Preview) | Dynamics CRM | FTP | SAP BW via MDX | SAP Cloud For Customer | SAP ECC | Zoho (Preview)

Azure Search | Azure Table Storage | Cassandra | File System | Google AdWords (Preview) | Google BigQuery | SAP HANA | SFTP | SQL Server

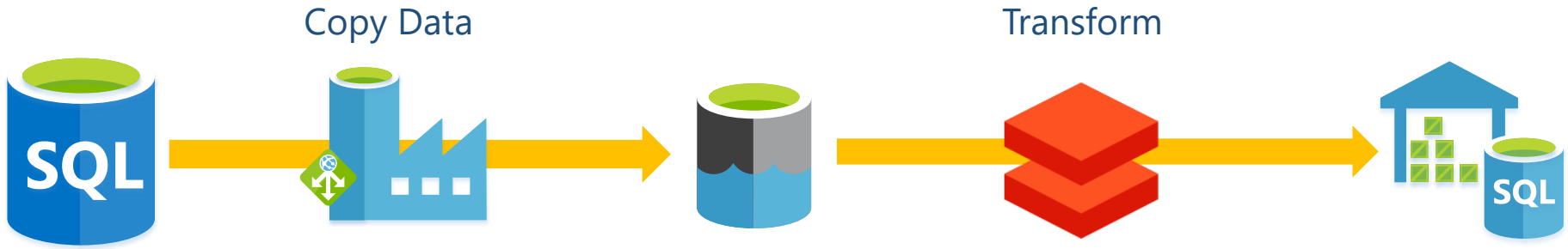
Common Data Service for Apps | Concur (Preview) | Couchbase (Preview) | Google Cloud Storage (S3 API) | Greenplum | HBase | Salesforce | Salesforce Marketing Cloud (Preview) | Salesforce Service Cloud

Data Factory Components



1 **Linked Services**

Data Factory Components

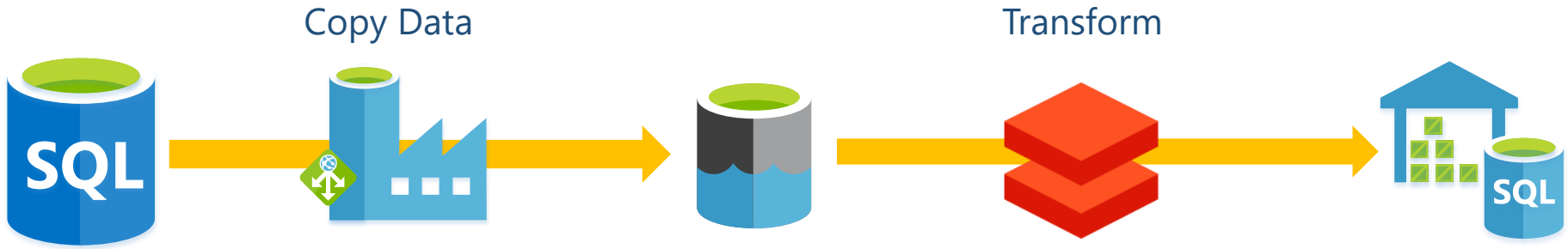


1. **Linked Services**
2. **Data Sets** – Where is my data? What format? What file path/table do I need?

dbo.DimCustomer

/RAW/Orders/2018/01/01/Orders.csv

Data Factory Components

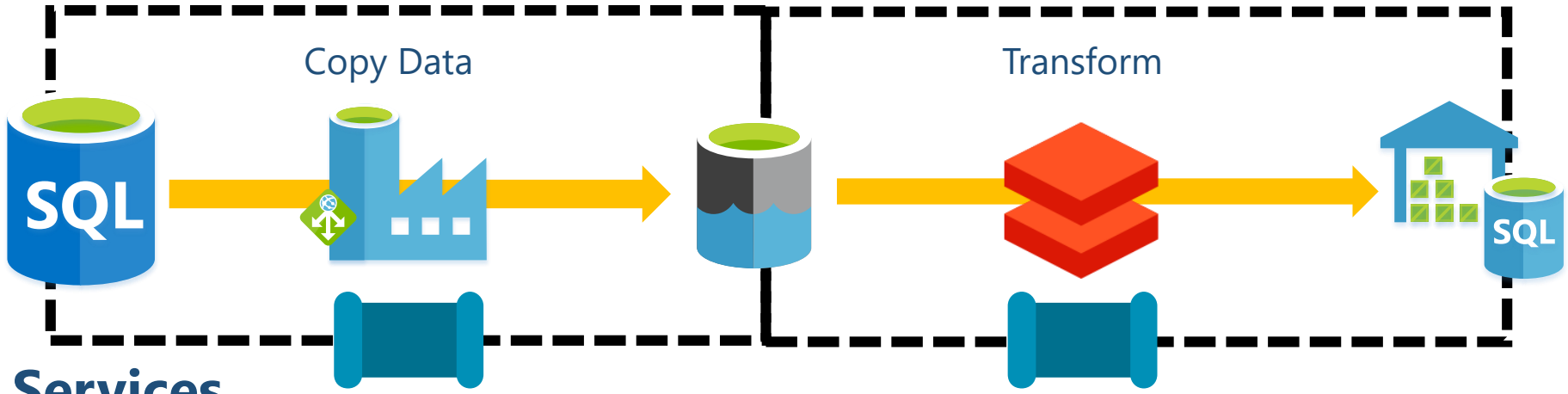


1. **Linked Services**
2. **Data Sets**
3. **Activities** – What do we want to happen? With what conditions?

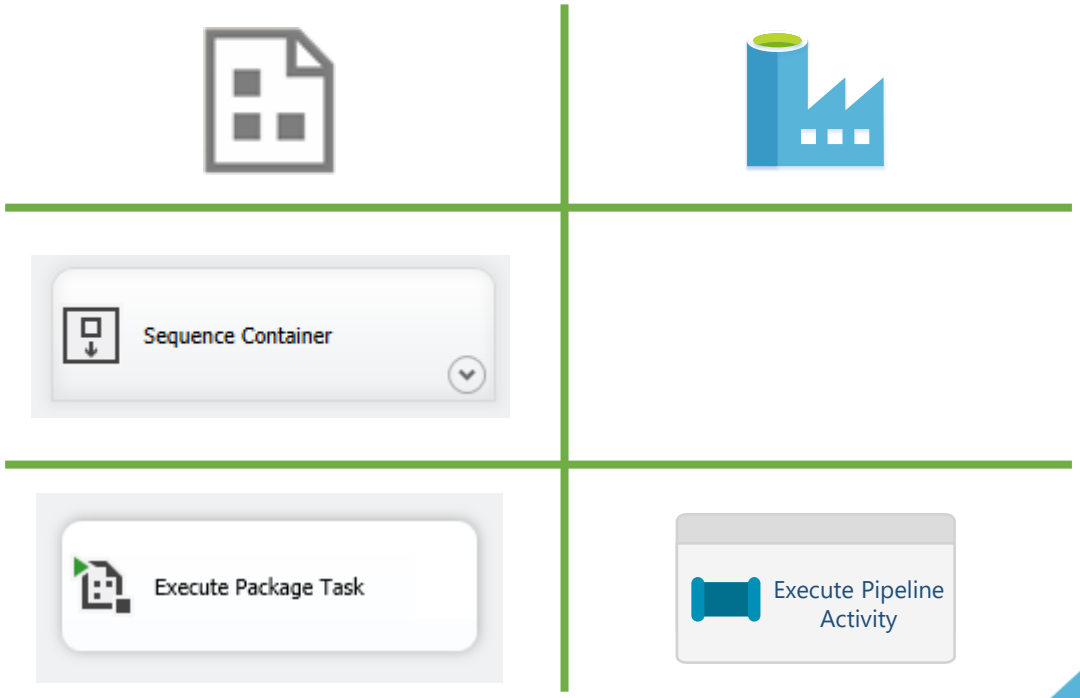
Databricks Notebook Activity

notebookPath: */Playground/Playing*
baseParameters: *Testing*
libraries[jar]: dbfs:/lib1.jar
linkedServiceName: *BricksOfData01*

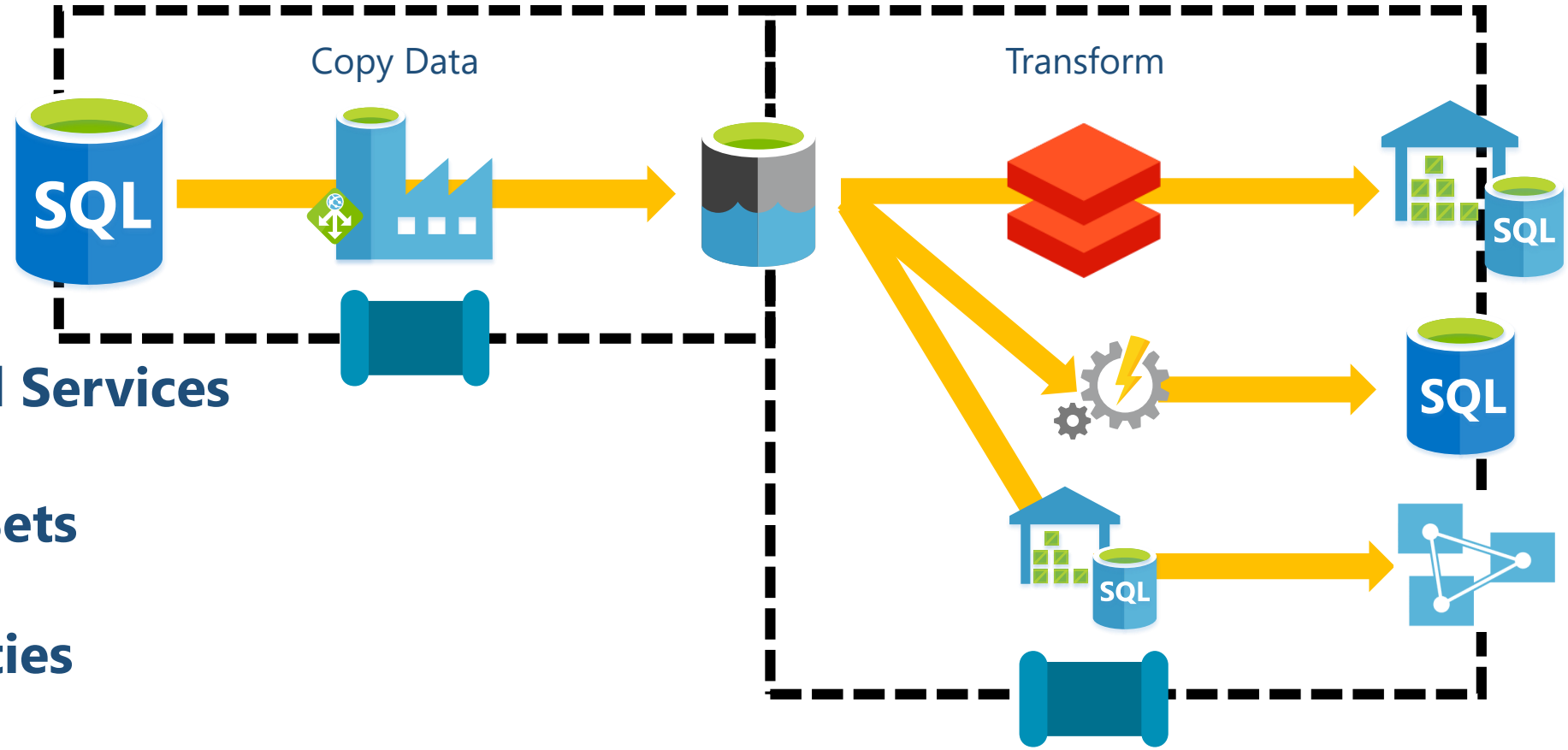
Data Factory Components



1. **Linked Services**
2. **Data Sets**
3. **Activities**
4. **Pipelines** – What groups of work do I want to do?

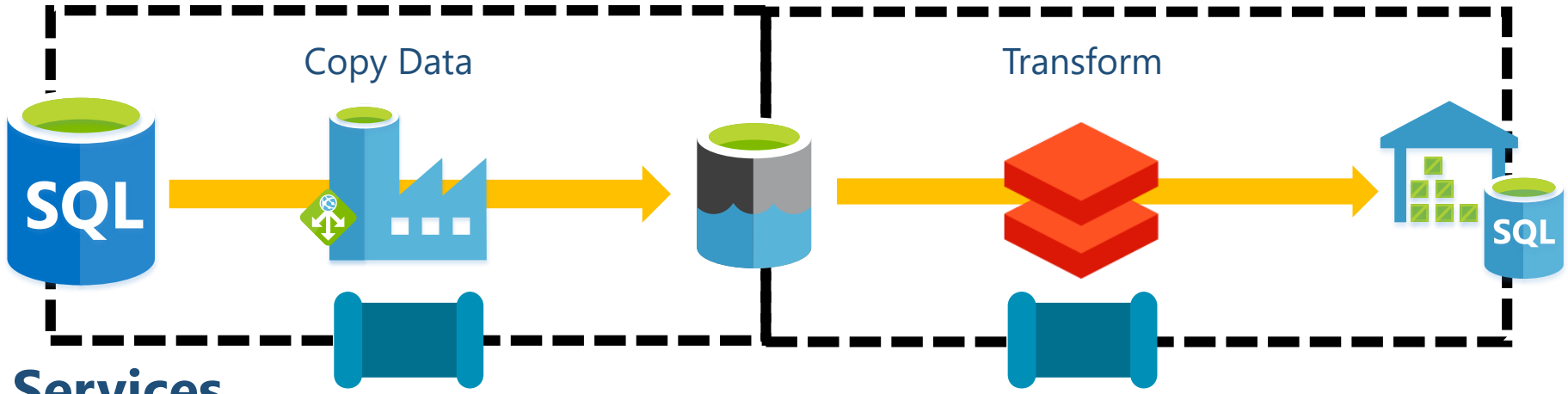


Data Factory Components



1. **Linked Services**
2. **Data Sets**
3. **Activities**
4. **Pipelines** – What groups of work do I want to do?

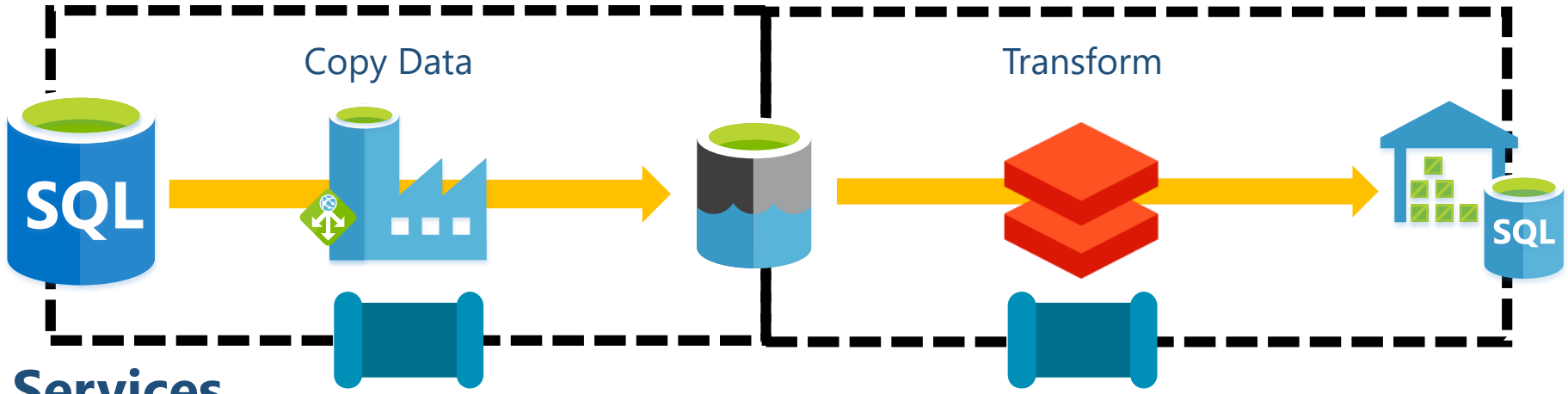
Data Factory Components



1. **Linked Services**
2. **Data Sets**
3. **Activities**
4. **Pipelines**
5. **Triggers** – How are we going to tell our pipeline(s) to execute?

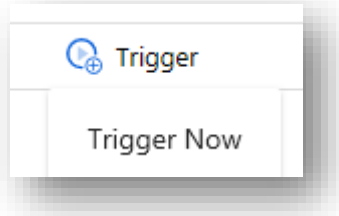
- Manual via UI
- Tumbling Windows
- Scheduled
- Blob File Events
- Logic App Calls

Data Factory Components



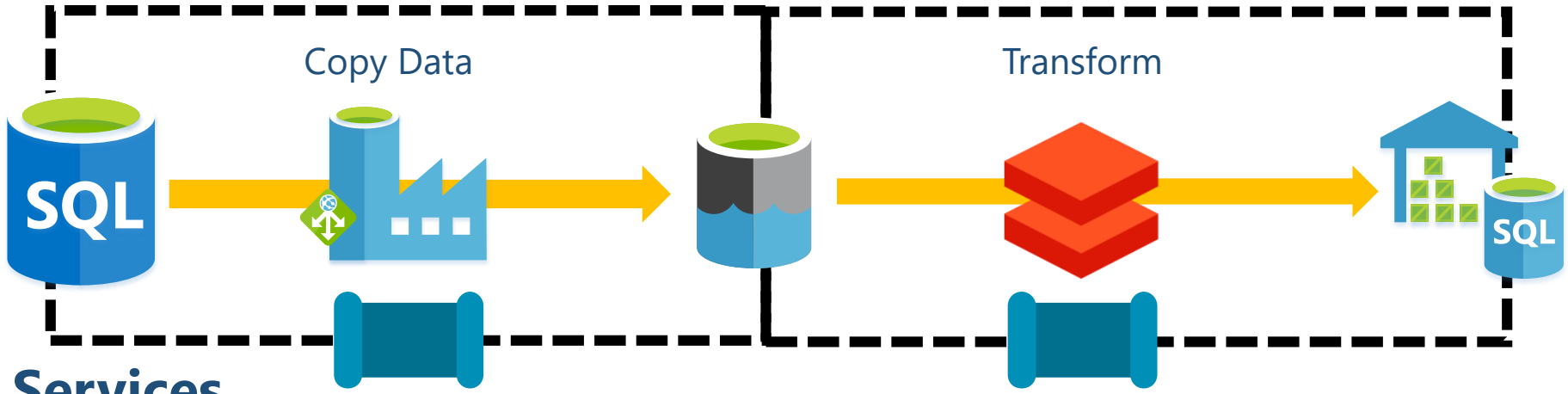
1. **Linked Services**
2. **Data Sets**
3. **Activities**
4. **Pipelines**
5. **Triggers**

- **Manual**
- Tumbling Windows
- Scheduled
- Blob File Events
- Logic App Calls



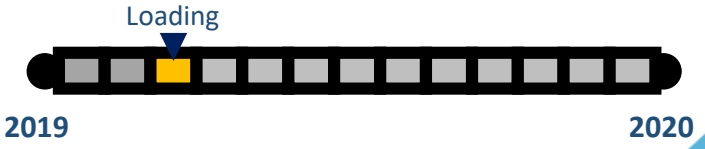

```
Invoke-AzureRmDataFactoryV2Pipeline
-DataFactoryName $dataFactoryName
-ResourceGroupName $resourceGroupName
-PipelineName $pipelineName
```

Data Factory Components

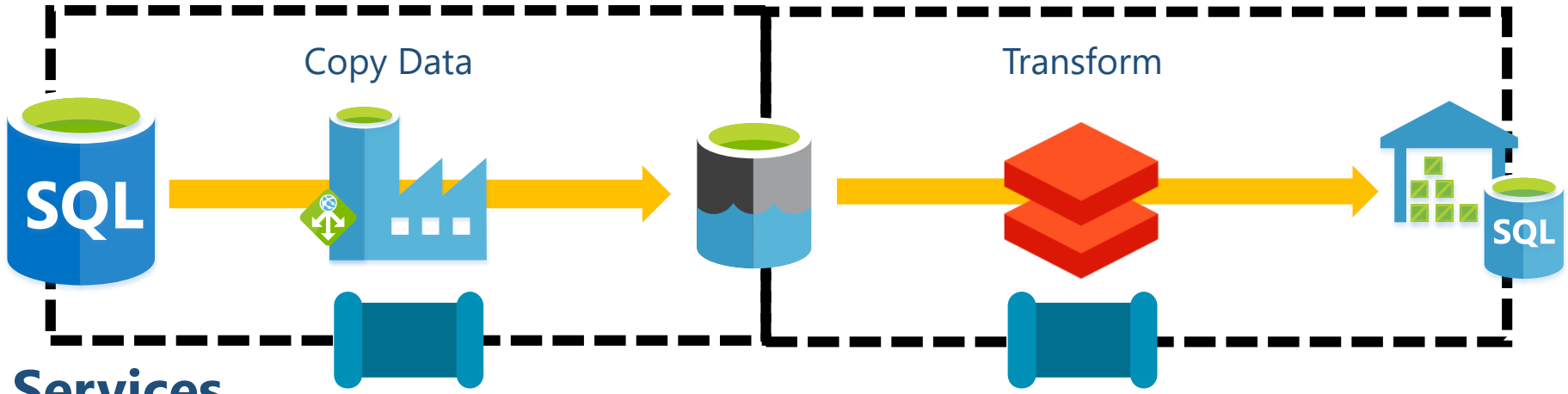


1. **Linked Services**
2. **Data Sets**
3. **Activities**
4. **Pipelines**
5. **Triggers**

- Manual via UI
- **Tumbling Windows** - AKA Time Slices
- Scheduled
- Blob File Events
- Logic App Calls



Data Factory Components

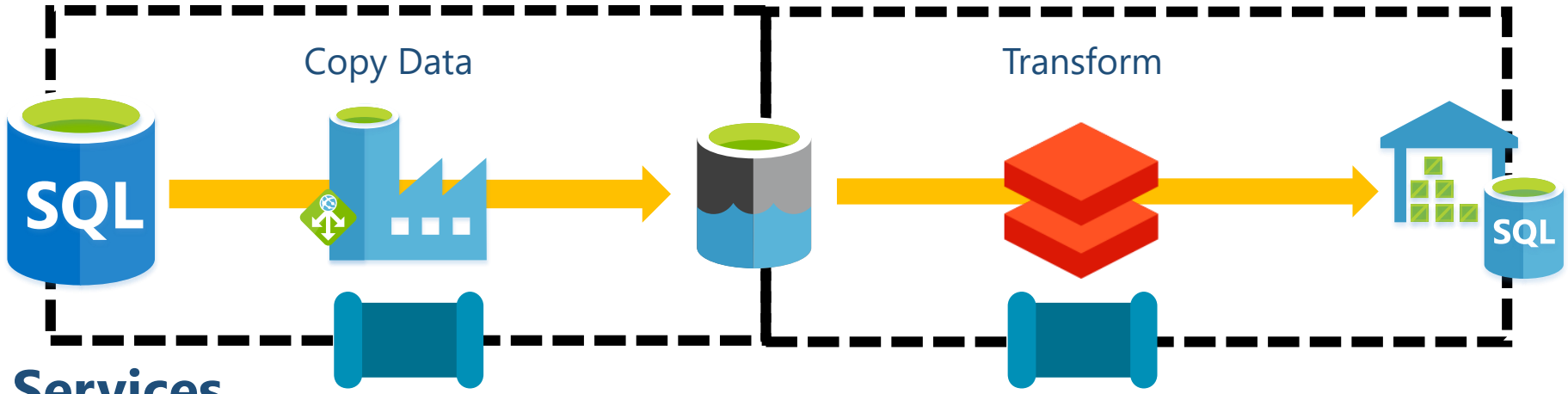


1. **Linked Services**
2. **Data Sets**
3. **Activities**
4. **Pipelines**
5. **Triggers**

- Manual via UI
- Tumbling Windows
- **Scheduled**
- Blob File Events
- Logic App Calls

- Every 1 minute.
- UTC

Data Factory Components

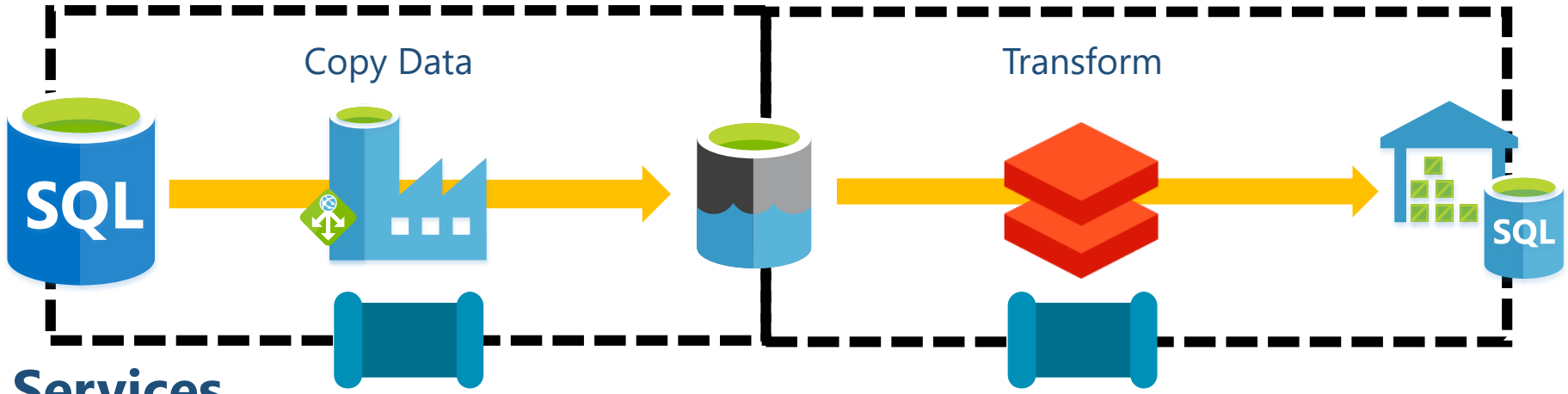


1. **Linked Services**
2. **Data Sets**
3. **Activities**
4. **Pipelines**
5. **Triggers**

- Manual via UI
- Tumbling Windows
- Scheduled
- **Blob File Events**
- Logic App Calls

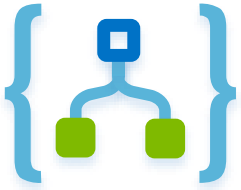
{Path} Created
{Path} Deleted

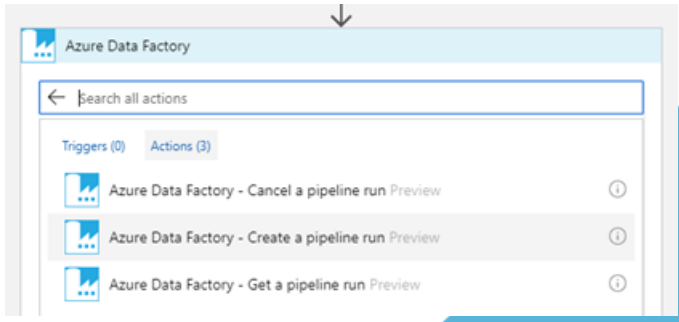
Data Factory Components



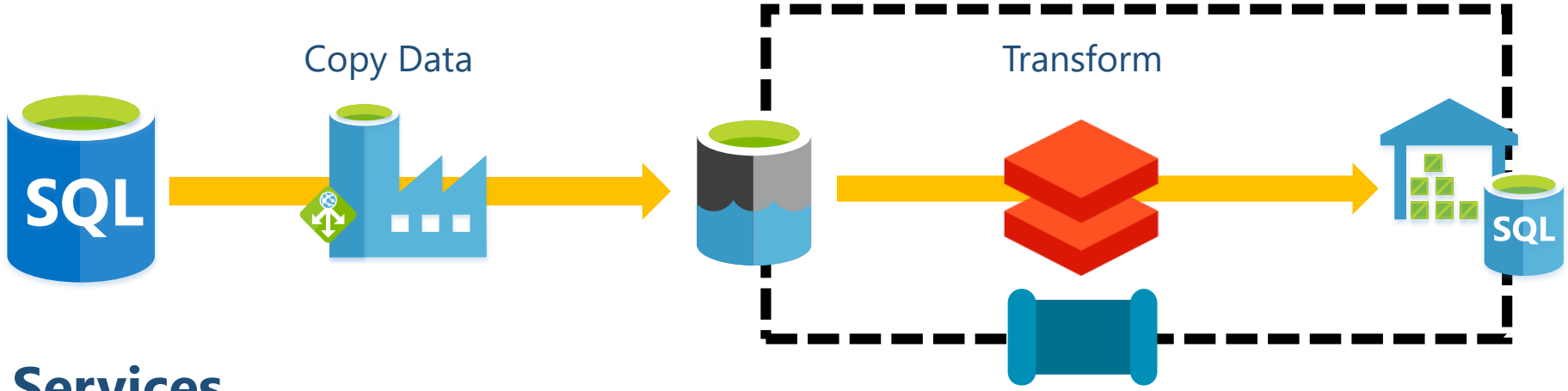
1. **Linked Services**
2. **Data Sets**
3. **Activities**
4. **Pipelines**
5. **Triggers**

- Manual via UI
- Tumbling Windows
- Scheduled
- Blob File Events
- **Logic App Calls**





Data Factory Components – Recap



1. **Linked Services**
2. **Data Sets**
3. **Activities**
4. **Pipelines**
5. **Triggers**

Integration Runtimes

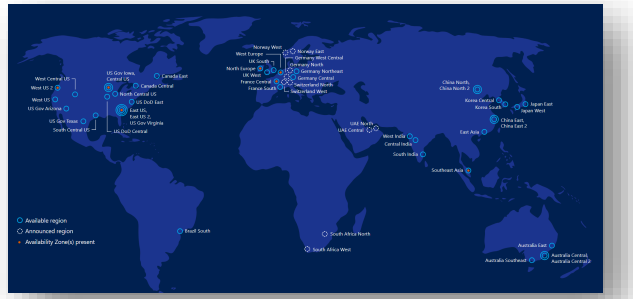
Integration Runtimes

Azure
Integration Runtime

Movement Hours

Activity
Orchestration

Flexible Region



Integration Runtimes / AutoResolveIntegrationRuntime / Resource Monitor (Details)

Refresh Edit Details Activities

STATUS	TYPE	REGION
Running	Azure	Auto Resolve

Orchestrator

Worker

Integration Runtimes

Orchestrator

Worker

Integration Runtimes – Azure

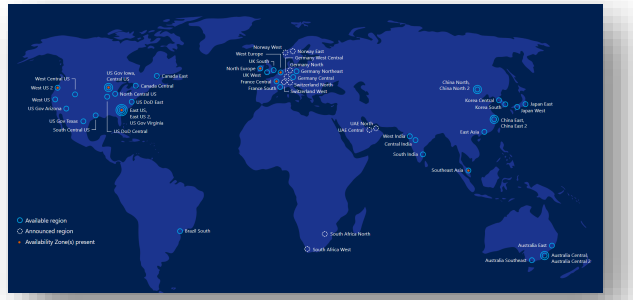
Integration Runtimes

Azure
Integration Runtime

Movement Hours

Activity
Orchestration

Flexible Region



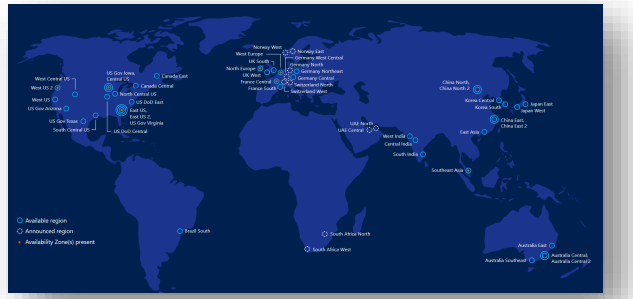
Integration Runtimes

1 **Azure** Integration Runtime

Movement Hours

Activity Orchestration

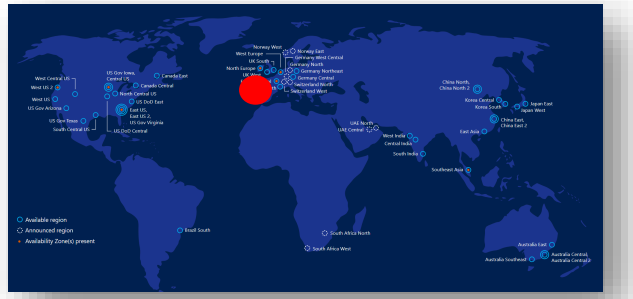
Flexible Region



2 **SSIS** Integration Runtime

SSIS Package Execution

Specified Region



3 **Self Hosted** Integration Runtime

Gateway Access

Activity Orchestration

Virtual Machine

Integration Runtimes

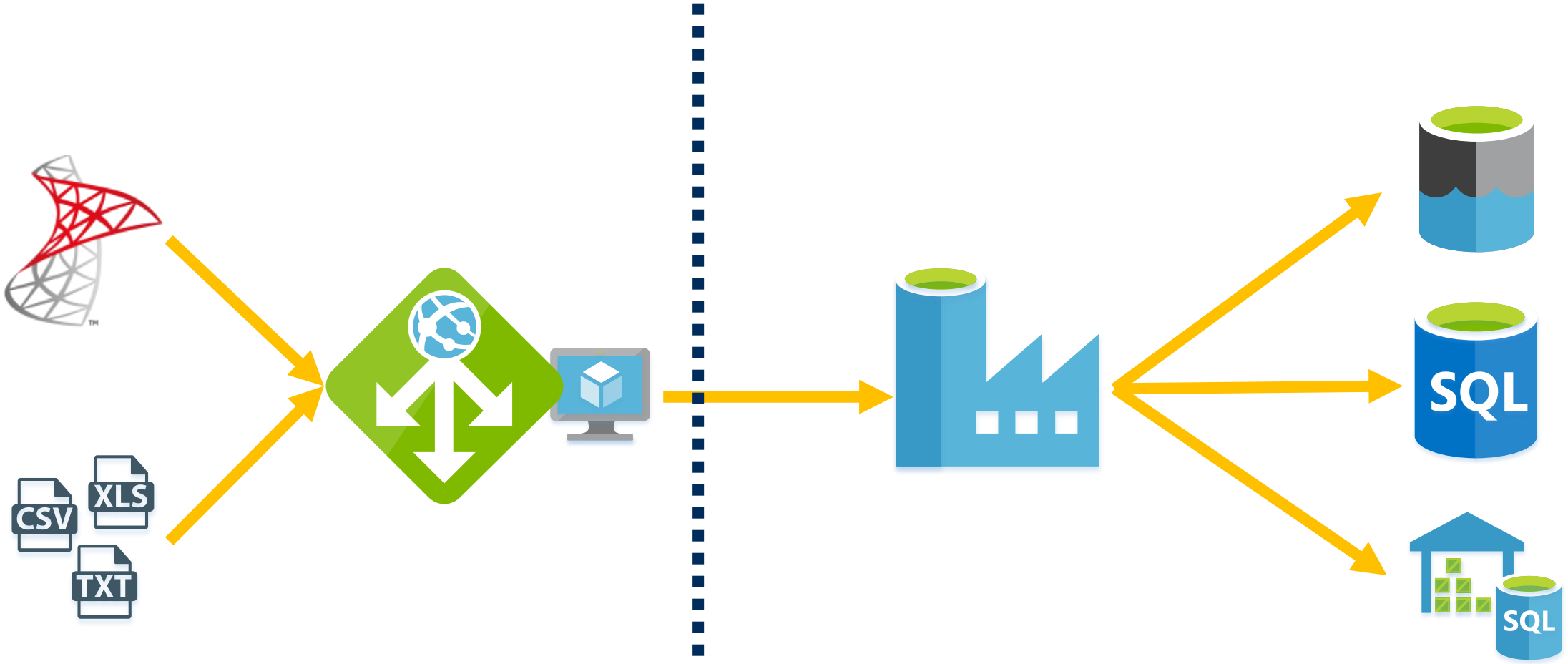
Self Hosted
Integration Runtime

Gateway Access

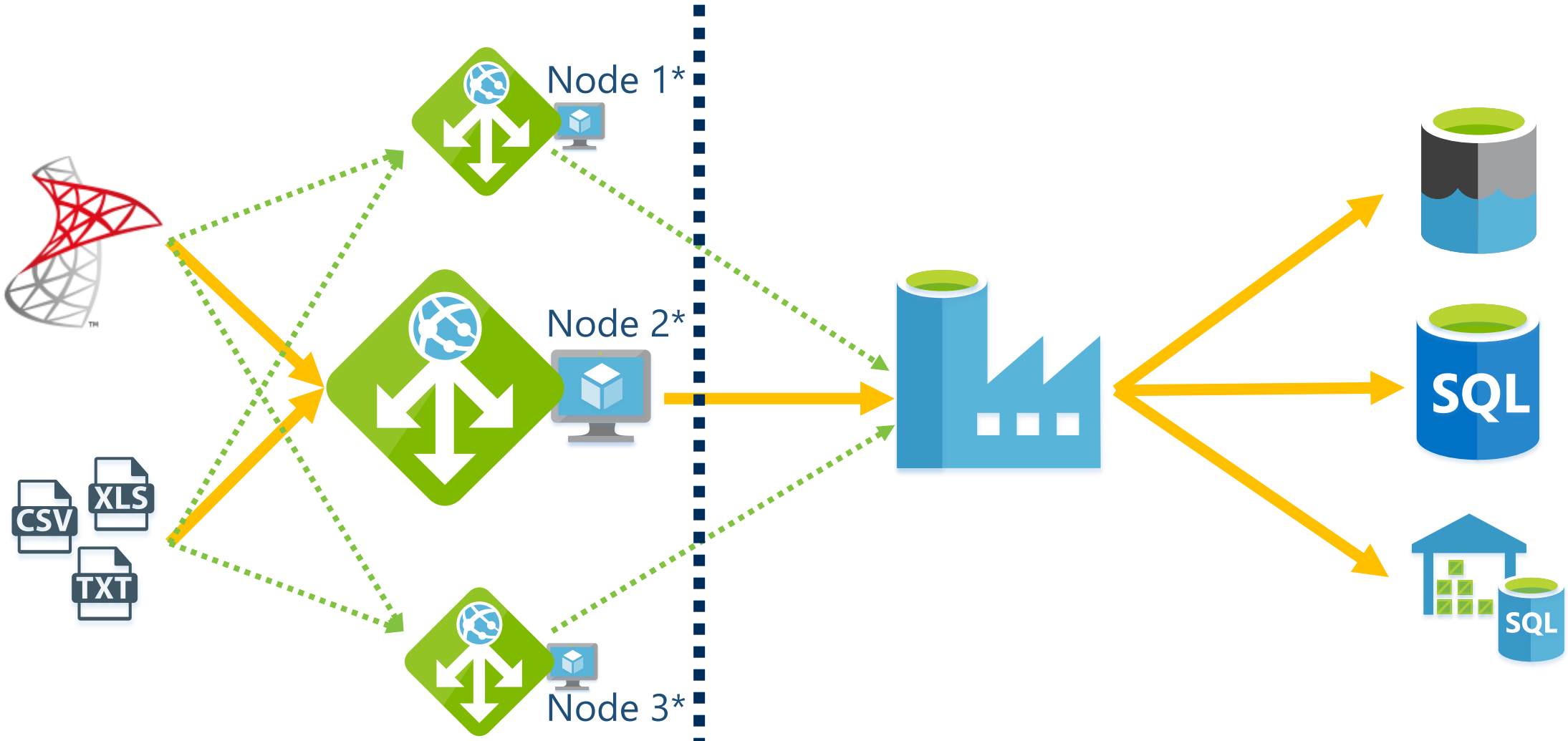
Activity
Orchestration

Virtual Machine

The Hosted Integration Runtime – Basic Pattern

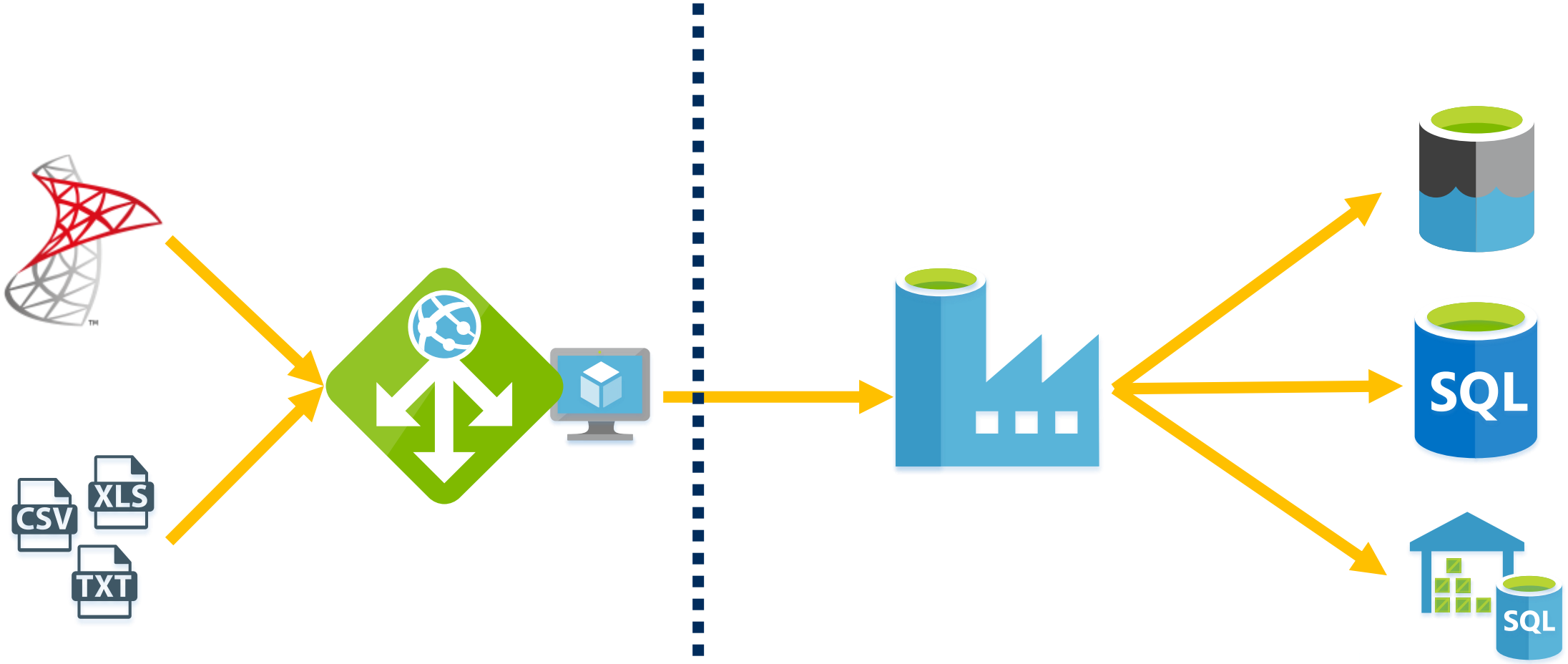


The Hosted Integration Runtime - Multiple Gateways

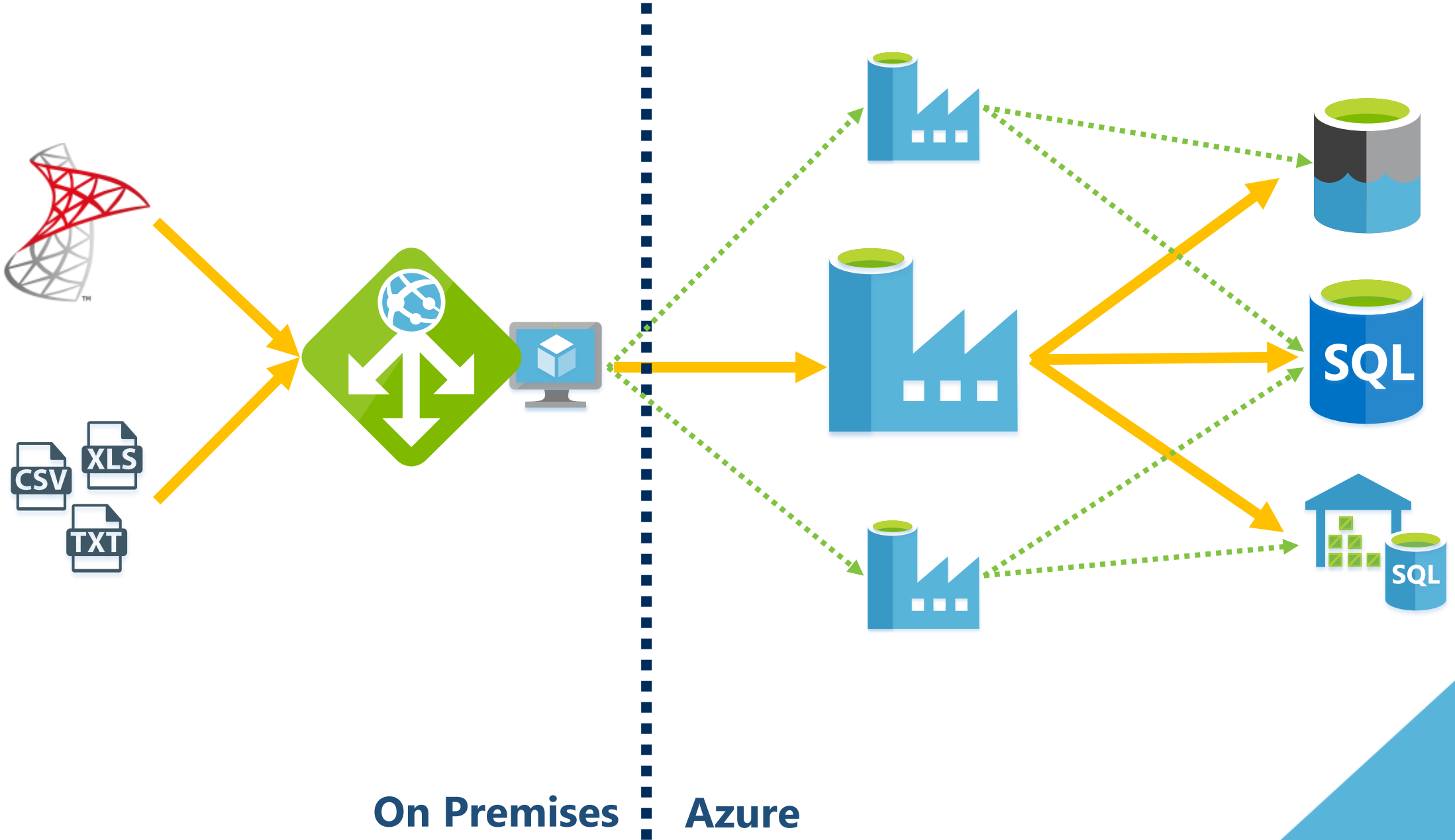


*Failover & Load Balancing

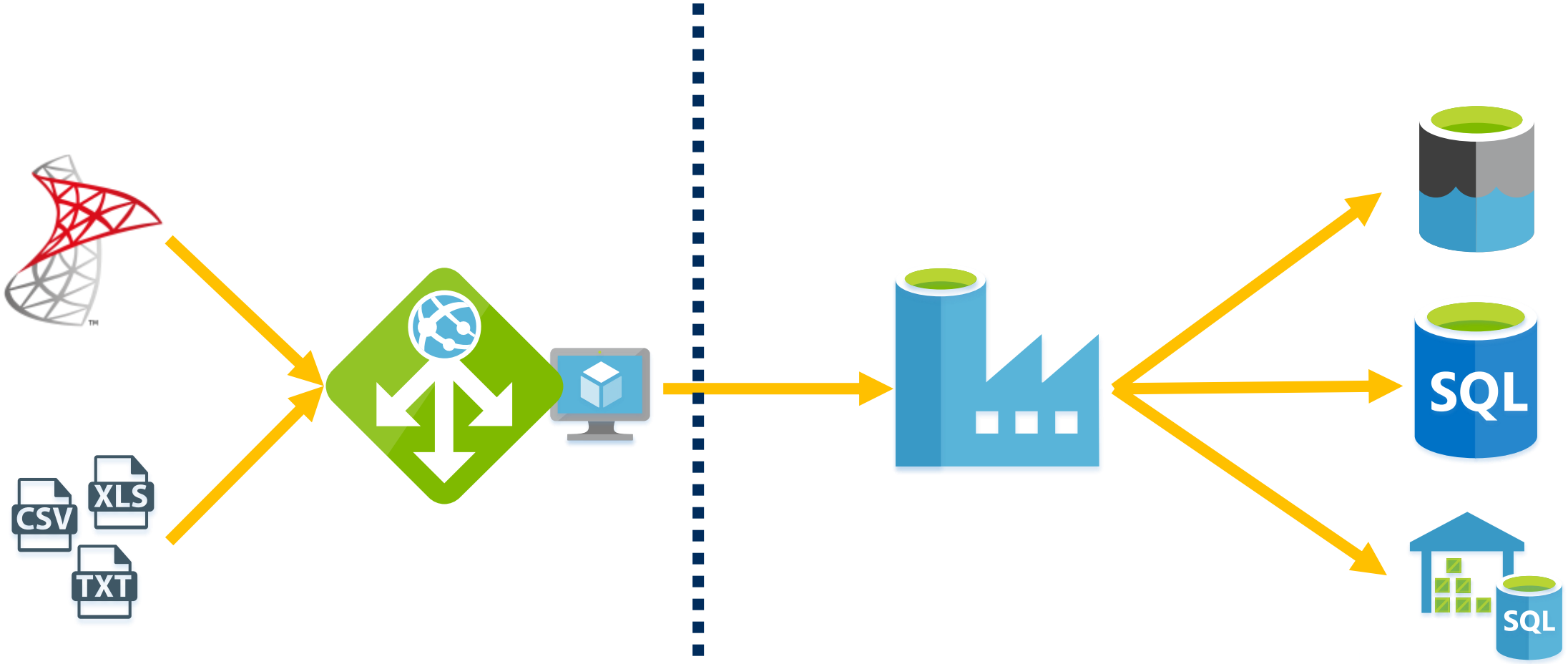
The Hosted Integration Runtime



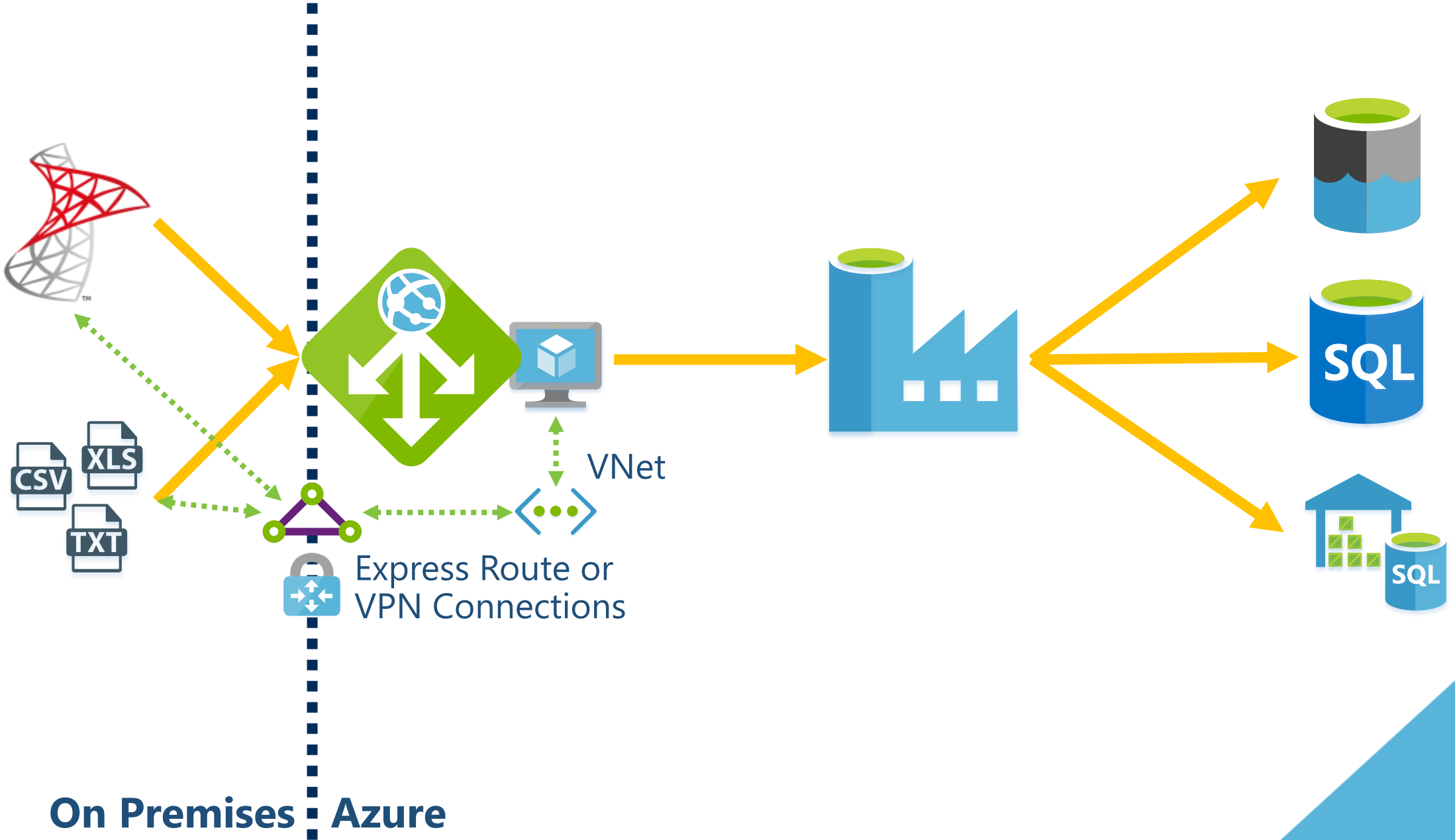
The Hosted Integration Runtime – Shared Gateways



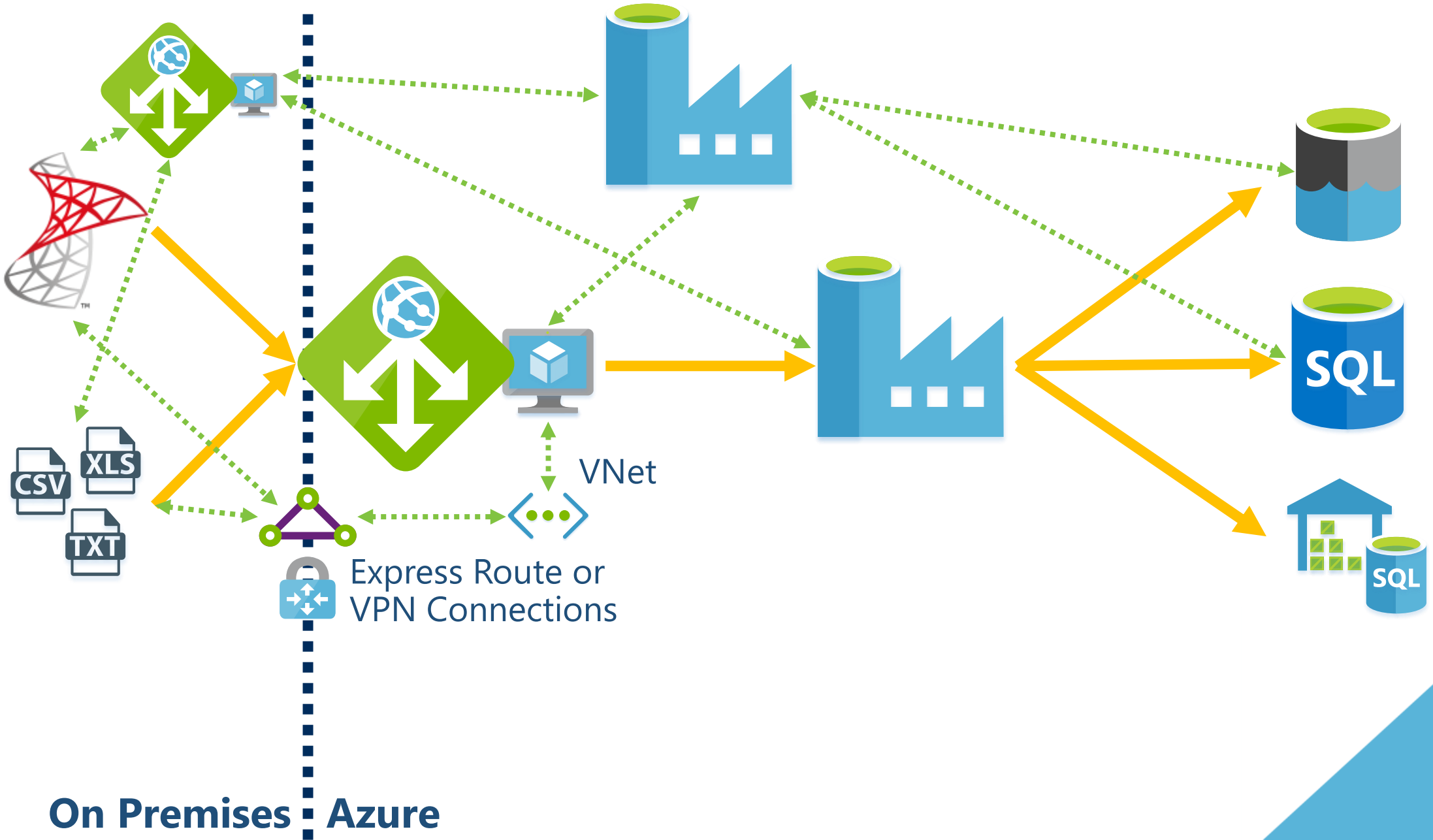
The Hosted Integration Runtime



The Hosted Integration Runtime – With Express Route

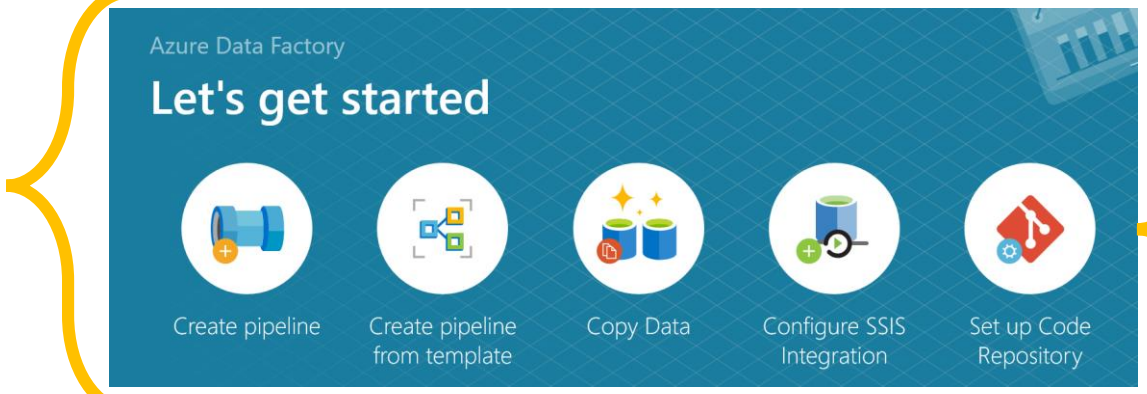


The Hosted Integration Runtime – Hybrid Gateways



Source Control

Configuring Source Control



Azure DevOps

GitHub

Git

Visual Studio Subscriber

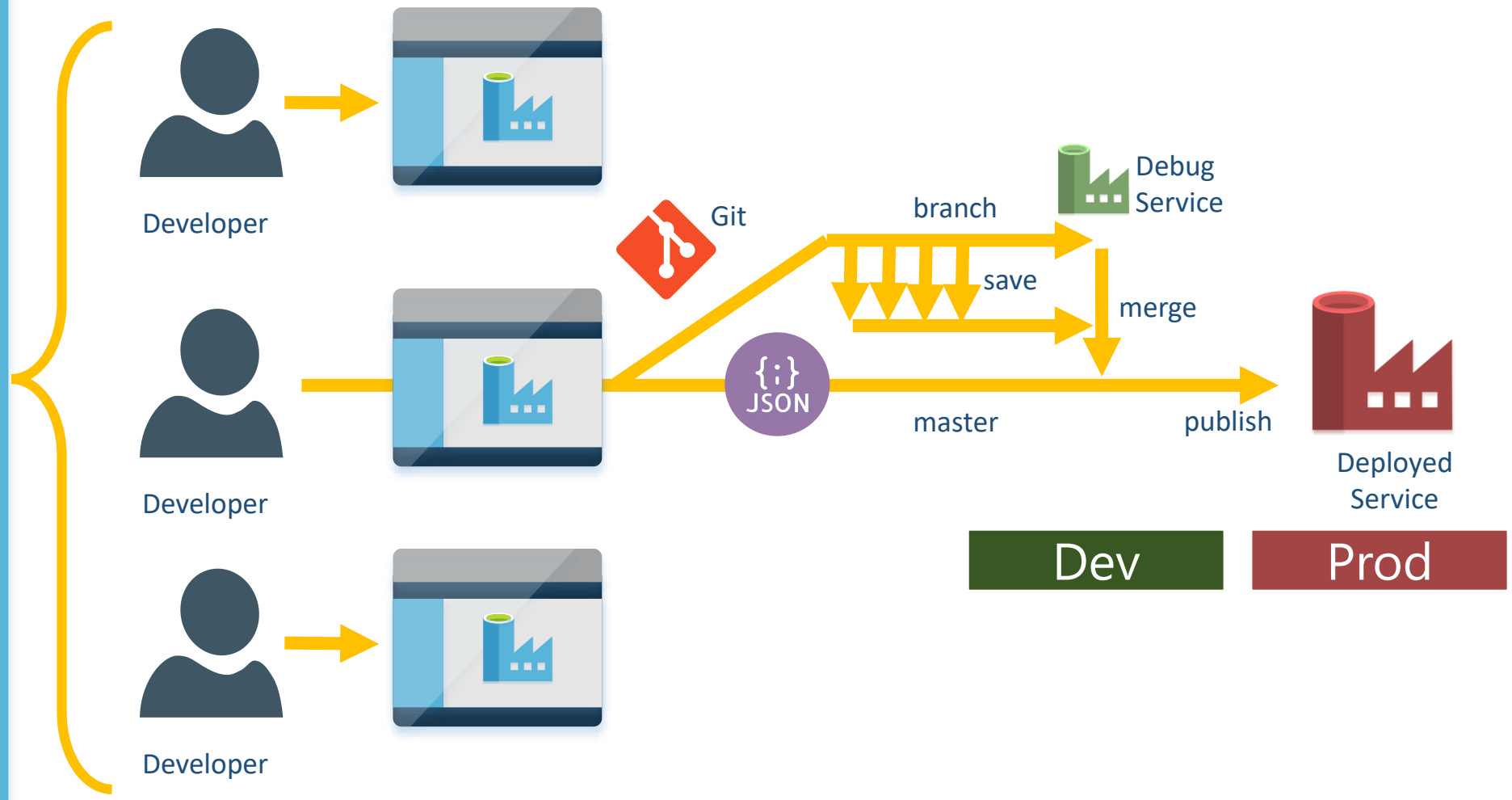
MSDN Alt Account

GitHub User

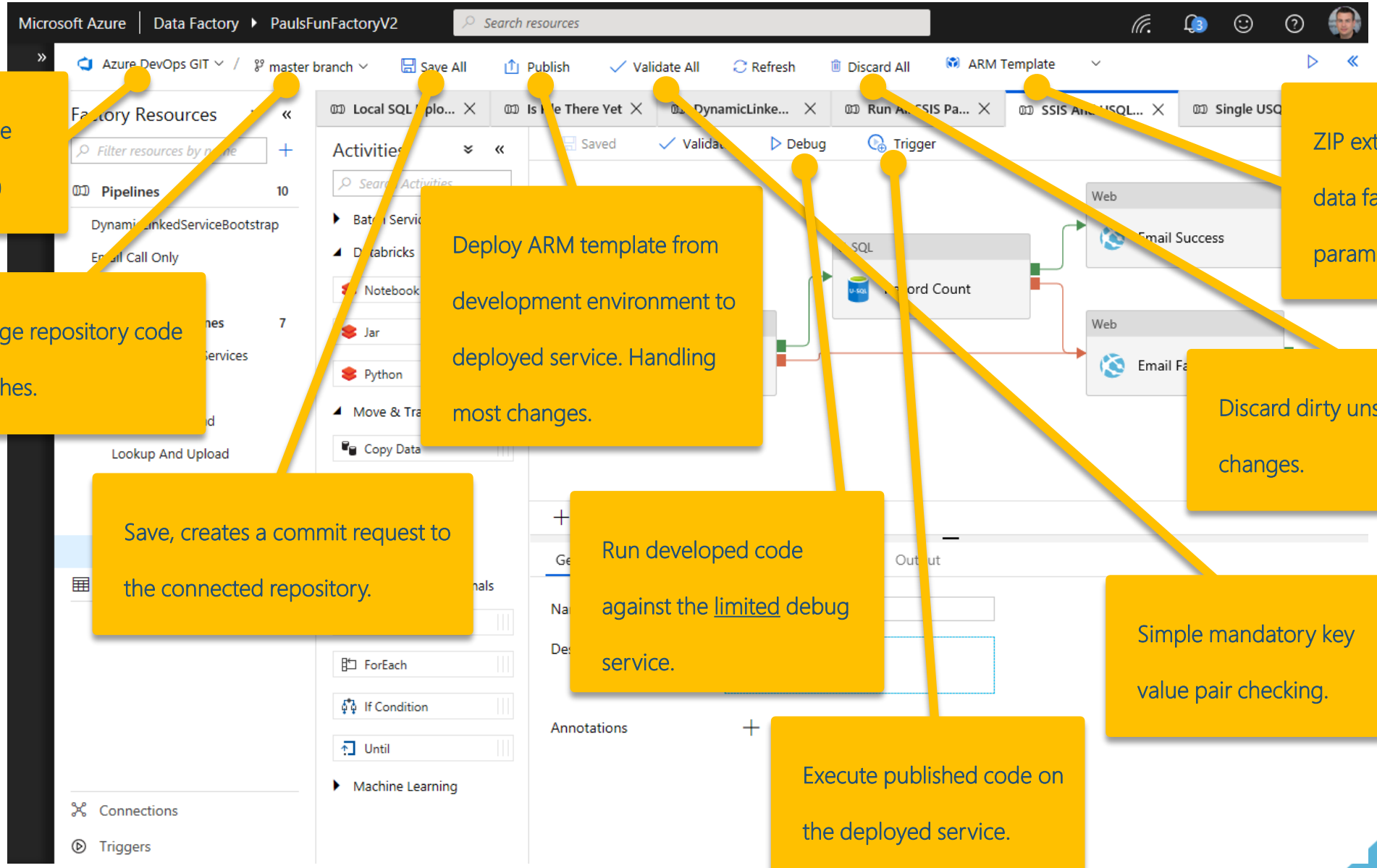
Azure Active Directory User

Work or School Account

Data Factory Continuous Integration



Data Factory Continuous Integration



Module 1 - What and why Azure Data Factory?

- Service Components
  - Linked Services
  - Datasets
  - Activities
  - Pipelines
- Integration Runtimes
  - Azure
  - SSIS
  - Hosted
- Source Control
  - GitHub
  - Azure DevOps (Git)