Cloud Orchestration

PaaS SSIS & ADFV2 Patterns

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Microsoft MVP Most Valuable Professional

Microsoft Partner
Microsoft
Gold Data Analytics
Gold Data Platform
Gold Cloud Platform

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Agenda

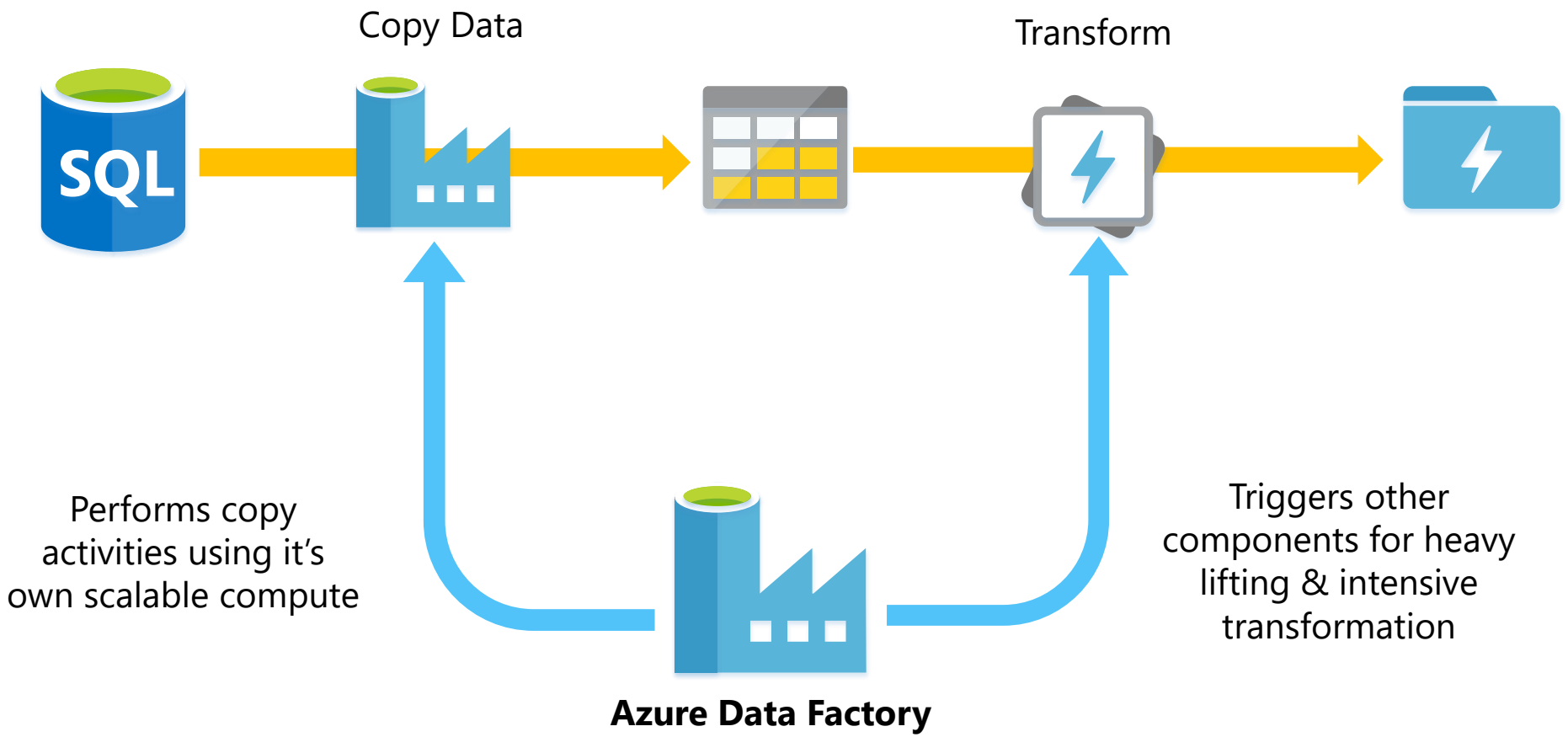
Data Factory Recap

ADFV2 Features Update

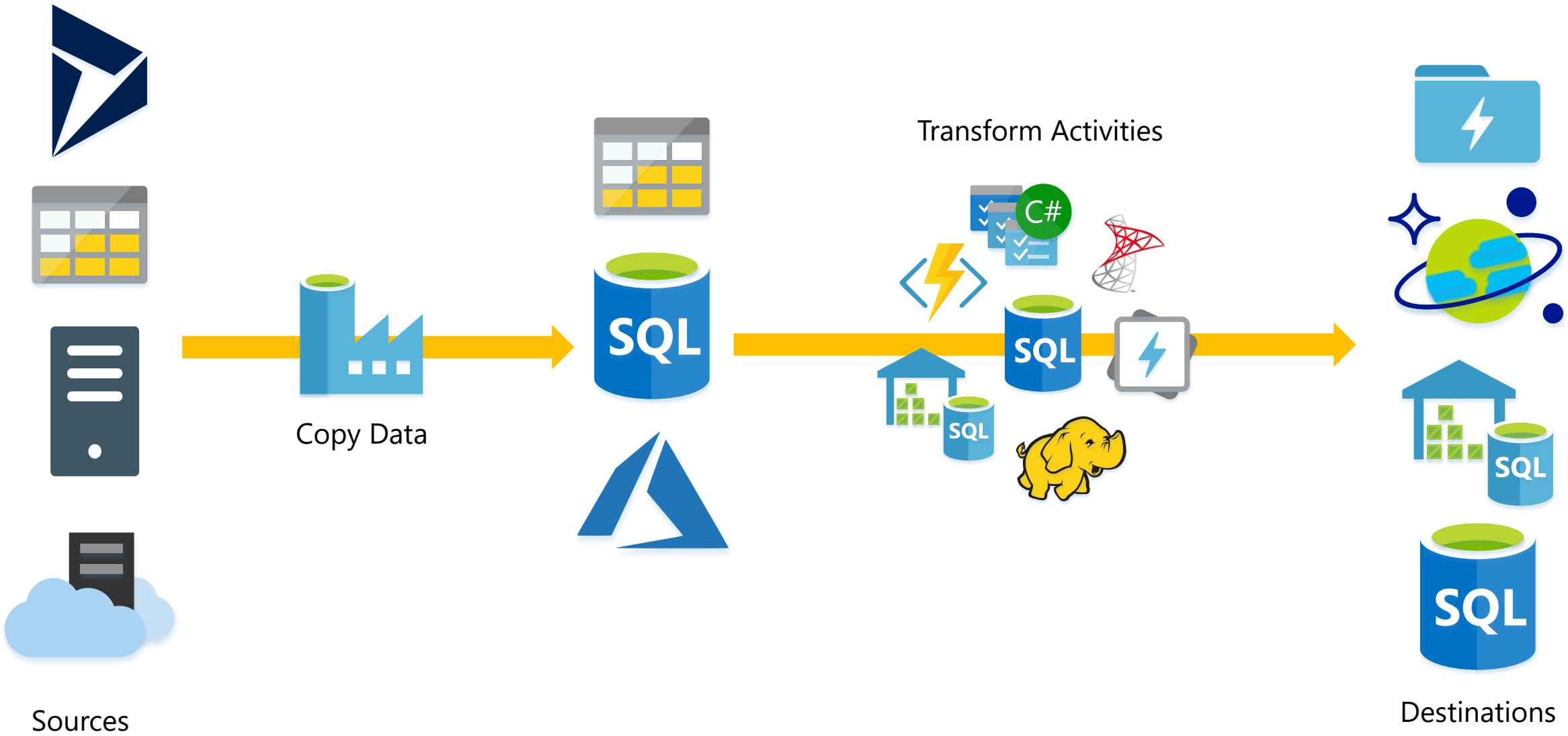
SSIS in Azure

Design Patterns & Conclusions

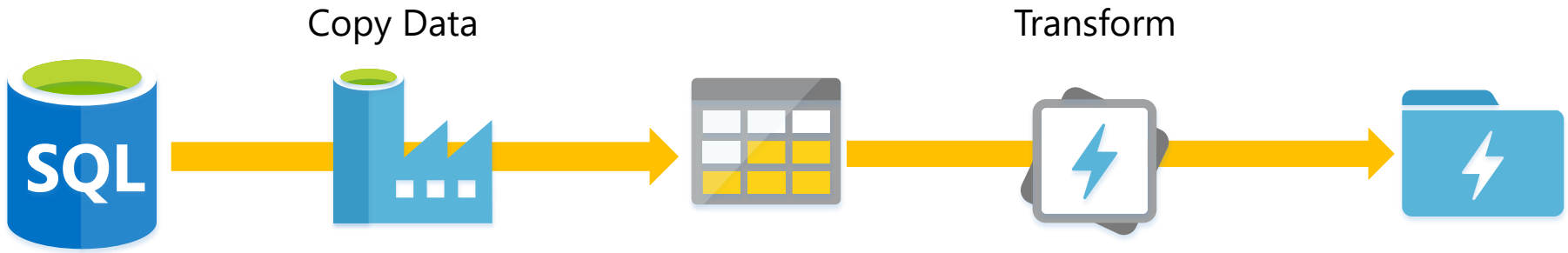
What is Azure Data Factory?



What is Azure Data Factory?



Data Factory Components



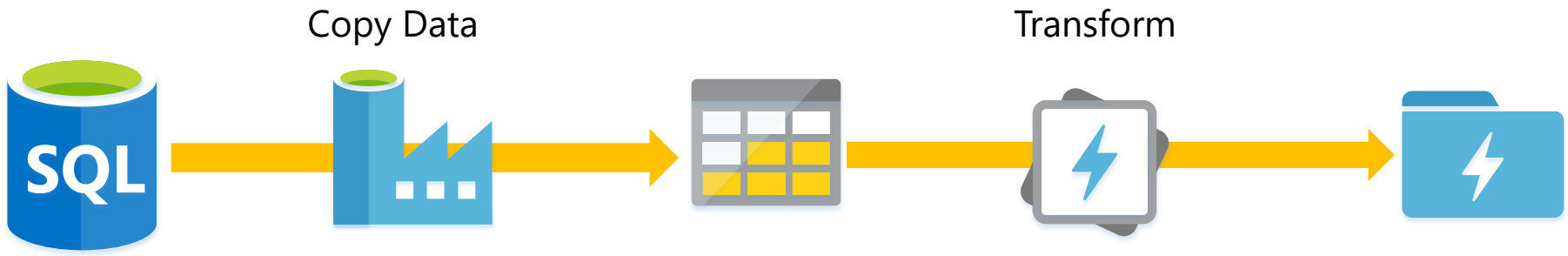
1 **Linked Services** – How do I connect?

Think SSIS Connection Managers!

SQLDBLinkedService

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

Data Factory Components

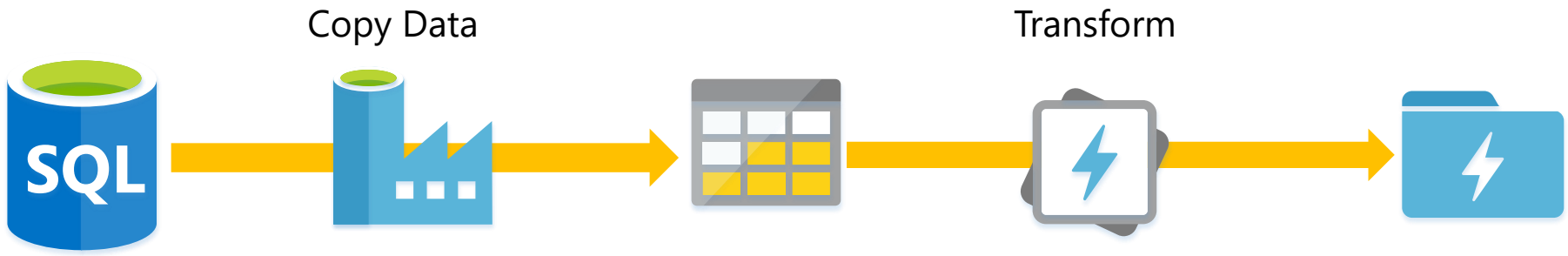


1. **Linked Services**
2. **Data Sets** – What slices/partitions does my data have?

dbo.DimCustomer

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

Data Factory Components

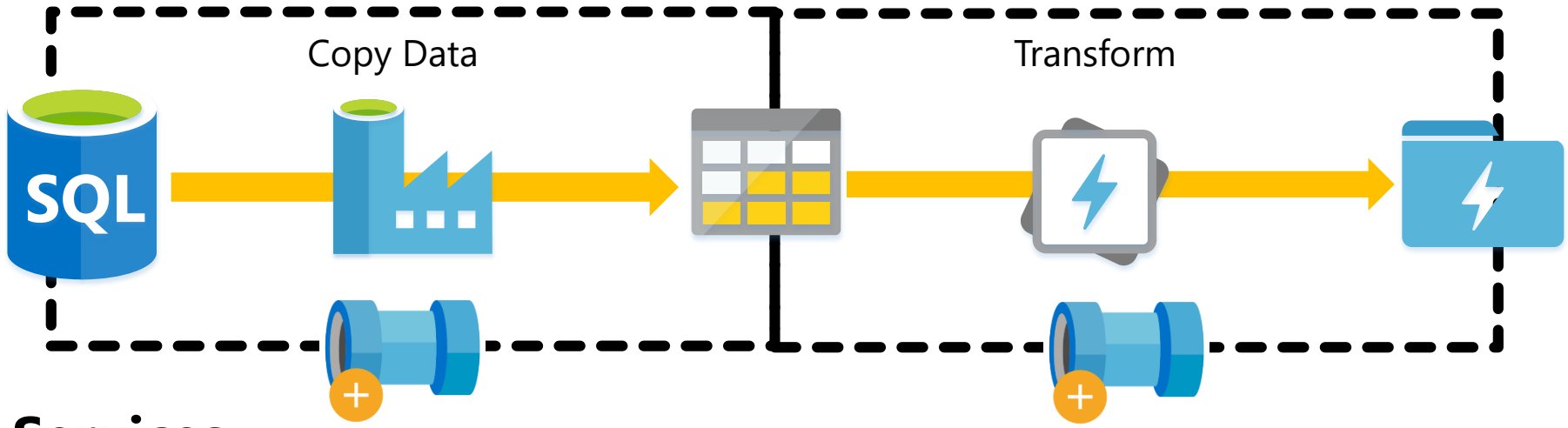


1. **Linked Services**
2. **Data Sets**
3. **Activities** – What actions am I taking?

U-SQL Activity

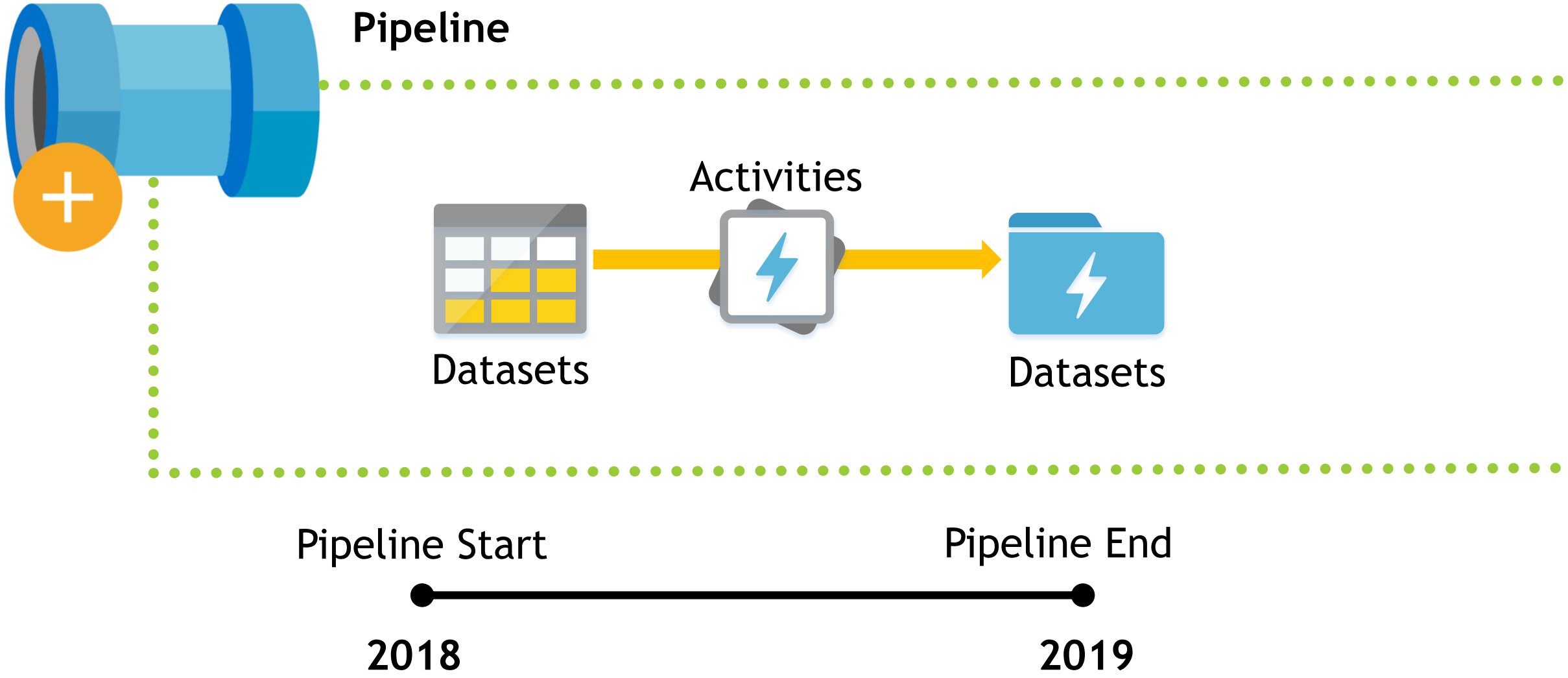
Script: *wasb//:myscripts/ProcessOrders.usql*
AUs: *5 units*
Priority: *1000*
Parameters: *@Output = "RAW/Orders/..."*

Data Factory Components

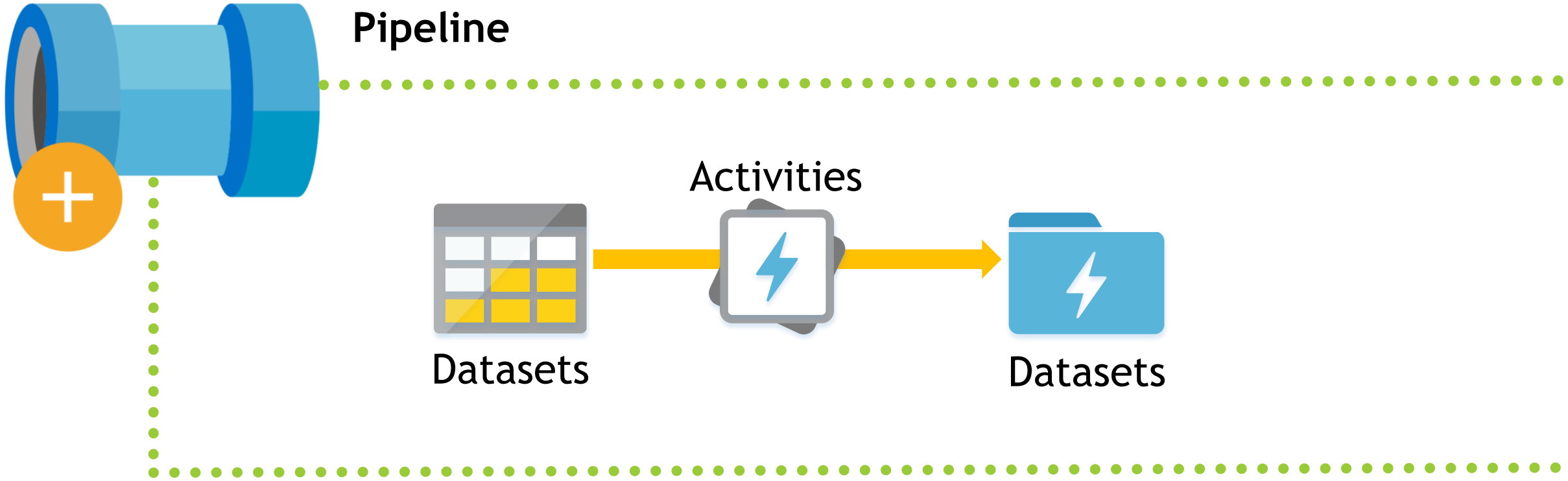


1. **Linked Services**
2. **Data Sets**
3. **Activities**
4. **Pipelines** – What groups of work do I want to do?

Azure Data Factory Concepts Continued

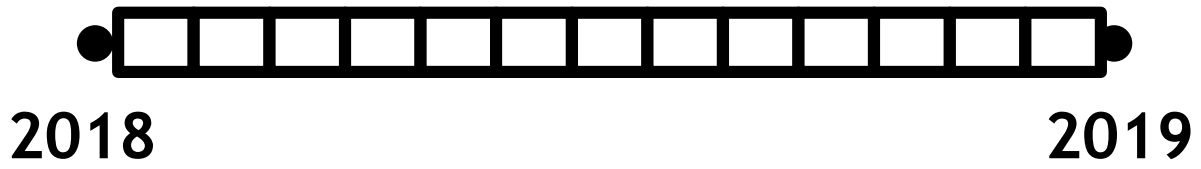


Azure Data Factory Concepts Continued

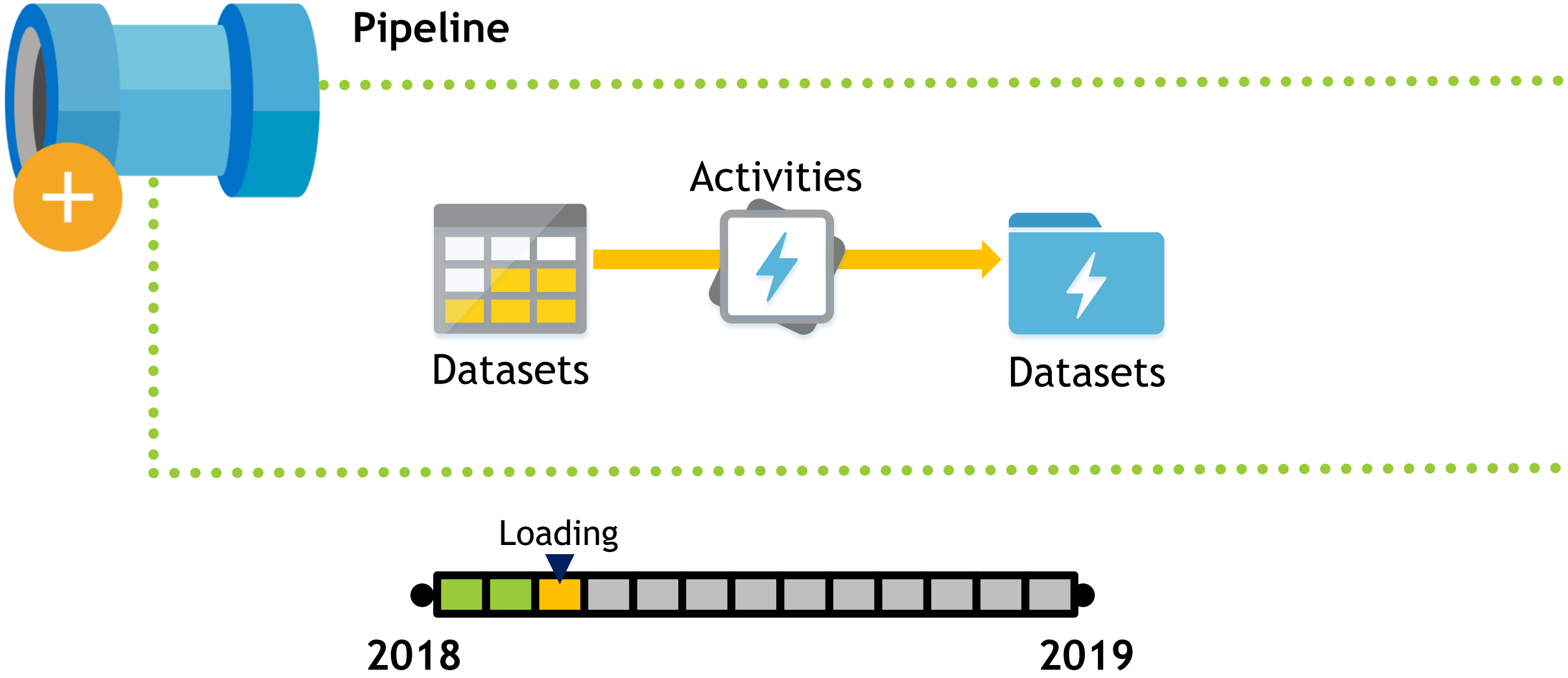


Interval: *Month*

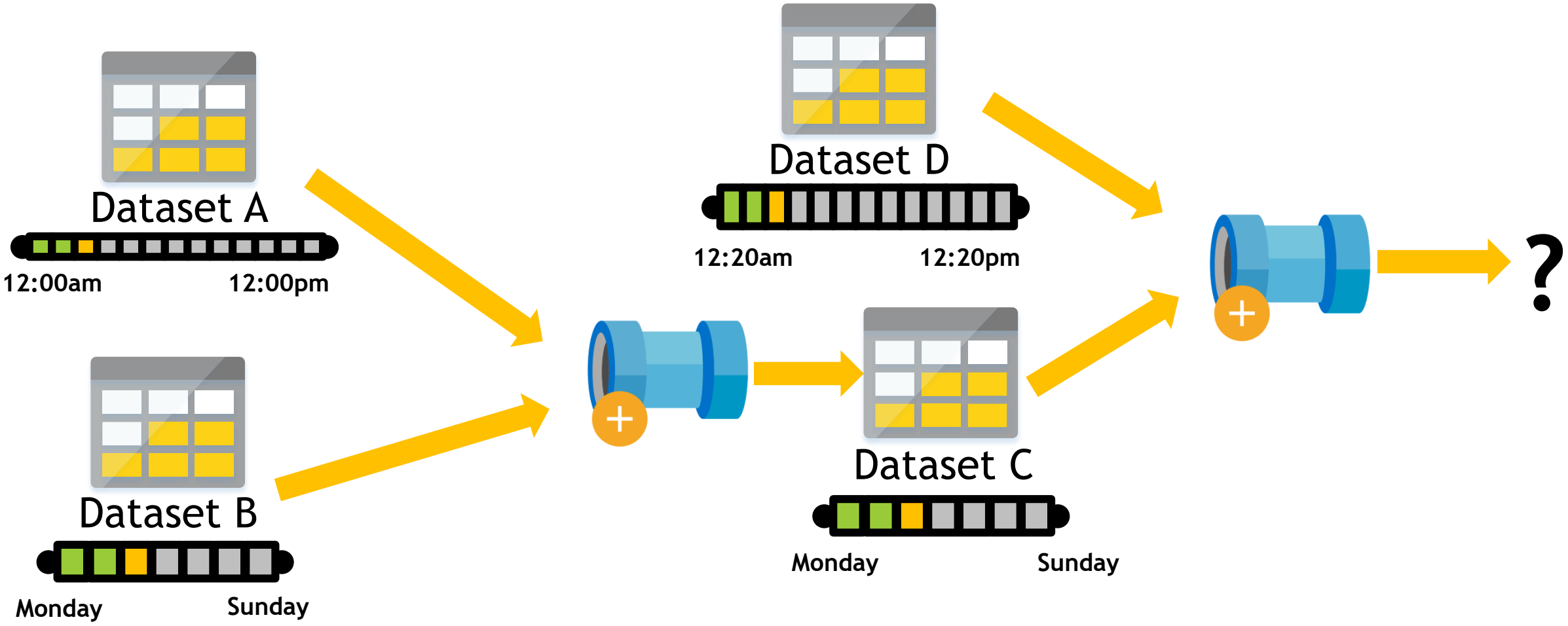
Frequency: *1*



Azure Data Factory Concepts Continued



Time Slice Problems…



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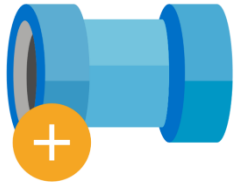
Integration Runtimes

1 Default Integration Runtime

Movement Hours



Activity Orchestration

Flexible Region

2 SSIS Integration Runtime

SSIS Package Execution

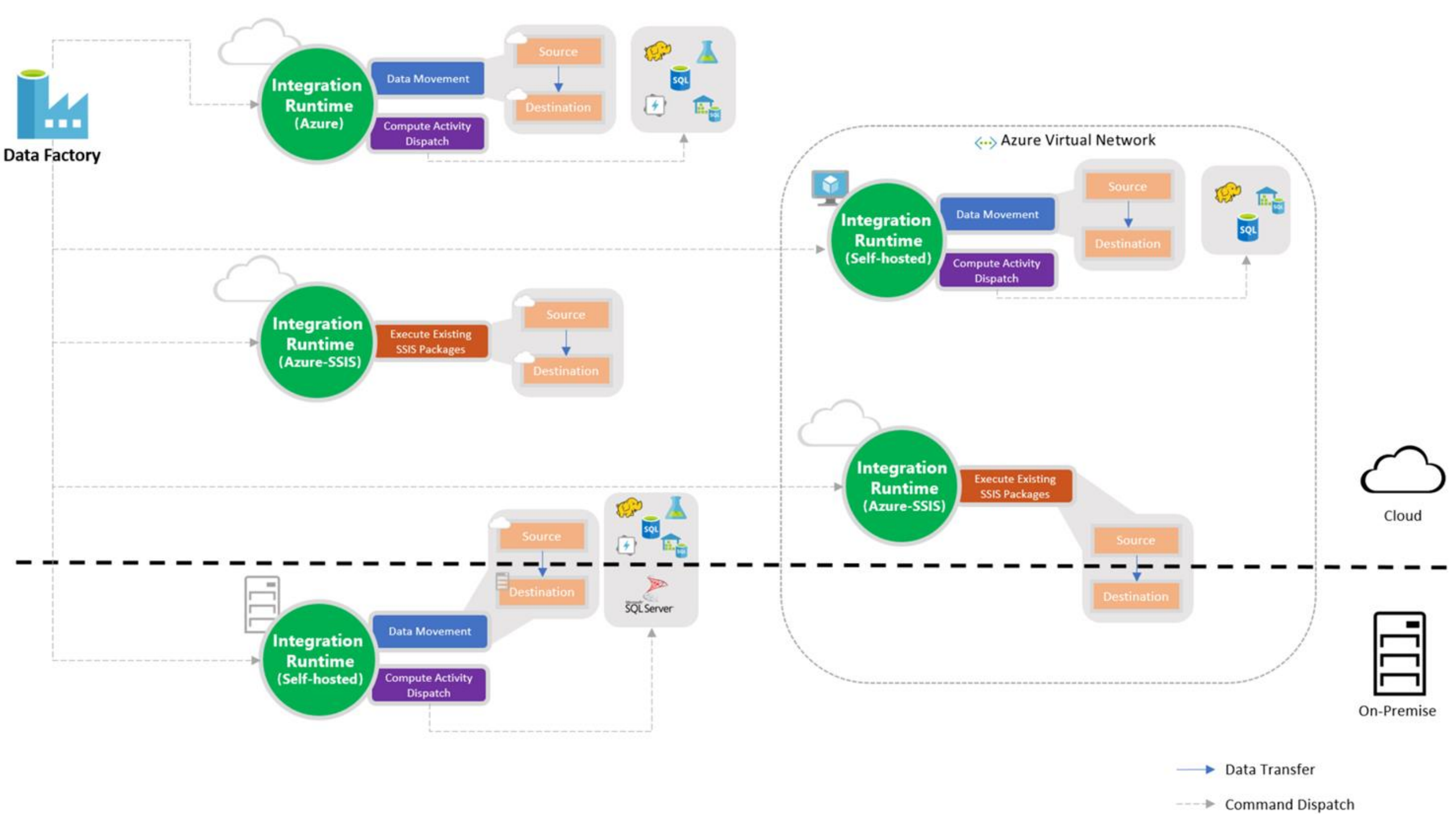
Specified Region

3 Self Hosted Integration Runtime

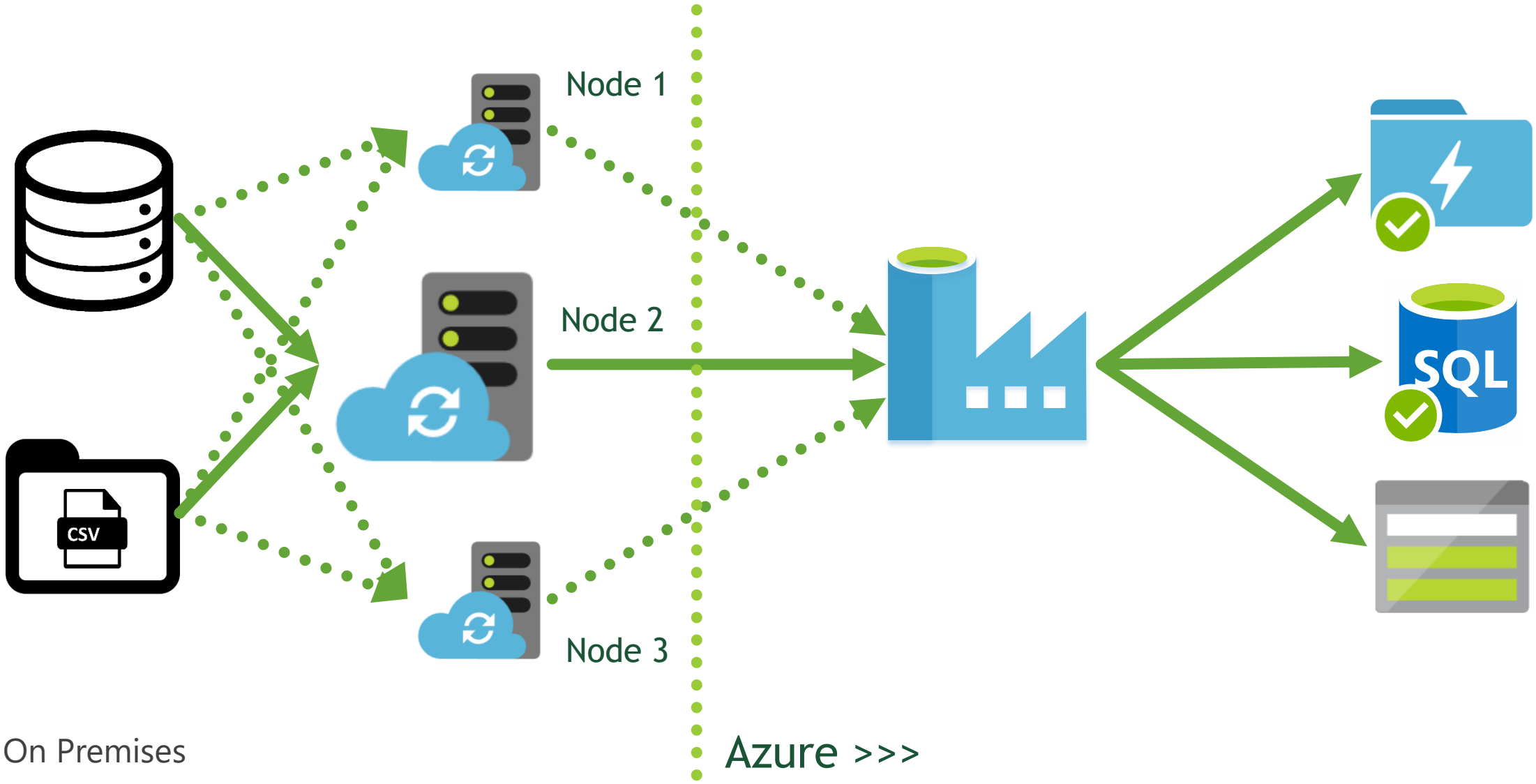
Local Compute

Activity Orchestration

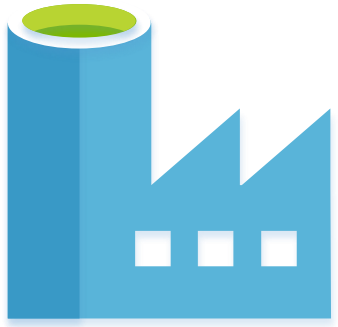
On-Prem Server


Data Factory
Integration Runtime (Azure)
Data Movement
Compute Activity Dispatch
Source
Destination
Azure Virtual Network
Integration Runtime (Self-hosted)
Data Movement
Compute Activity Dispatch
Source
Destination
Integration Runtime (Azure-SSIS)
Execute Existing SSIS Packages
Source
Destination
Integration Runtime (Azure-SSIS)
Execute Existing SSIS Packages
Source
Destination
Cloud
Integration Runtime (Self-hosted)
Data Movement
Compute Activity Dispatch
Source
Destination
SQL Server
On-Premise
Data Transfer
Command Dispatch

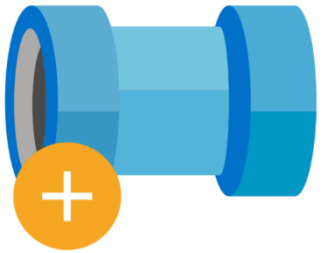
The Self-Hosted Integration Runtime *(AKA The Data Management Gateway)*



Azure Data Factory Concepts & Components Recap



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

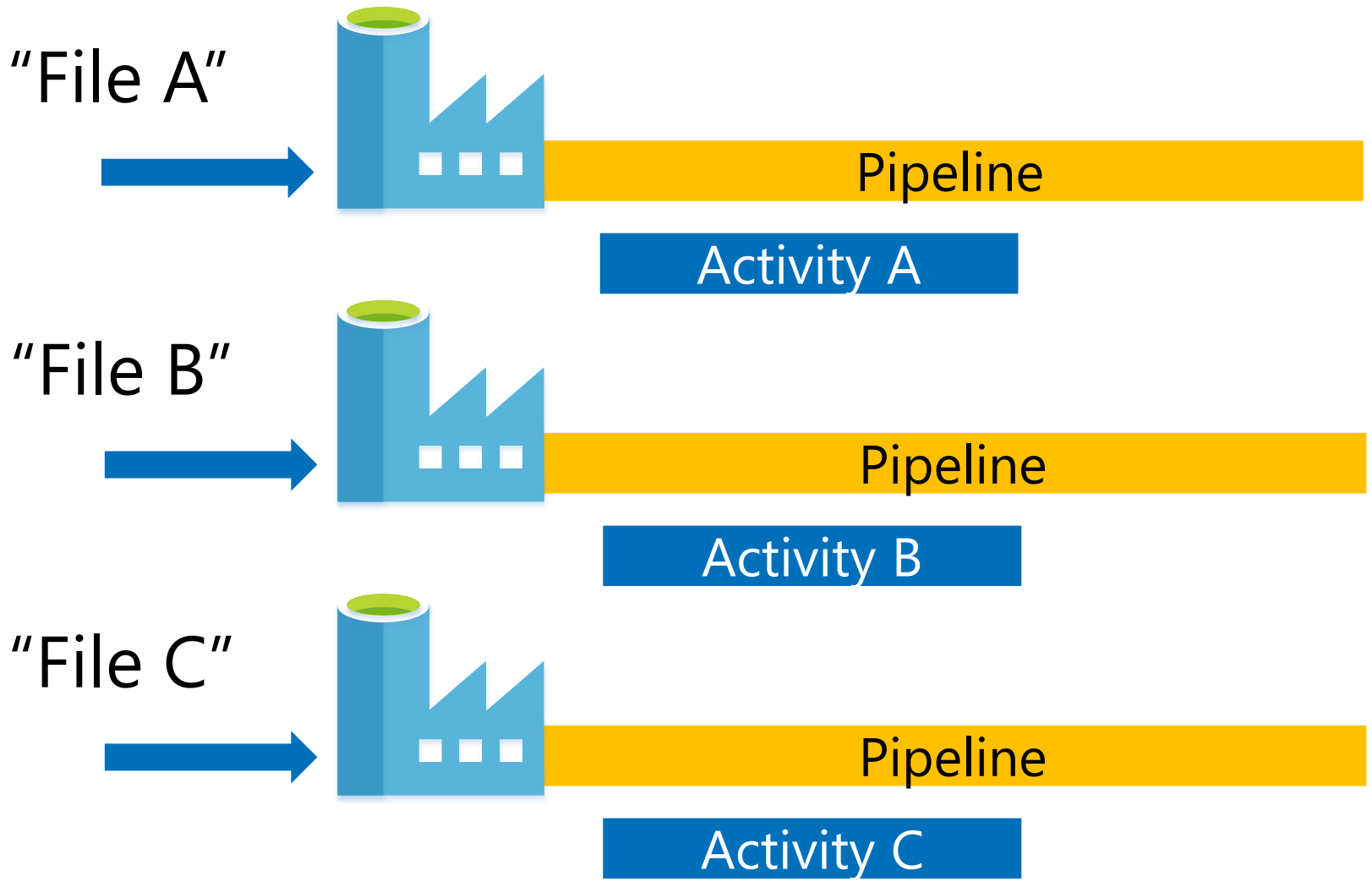


Time Slices

1. **Azure** Integration Runtime
2. **SSIS** Integration Runtime
3. **Self Hosted** Integration Runtime

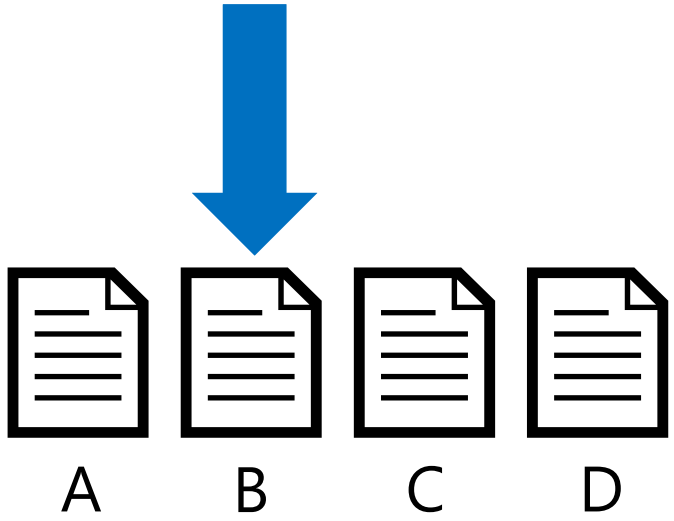
Demo: ADFV2

Hardcoded Pipelines

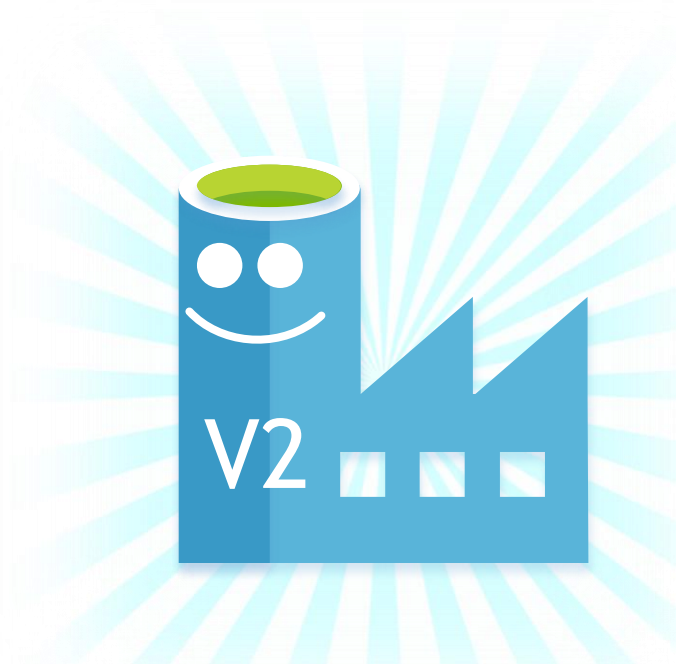


Dynamic Pipelines using Parameters

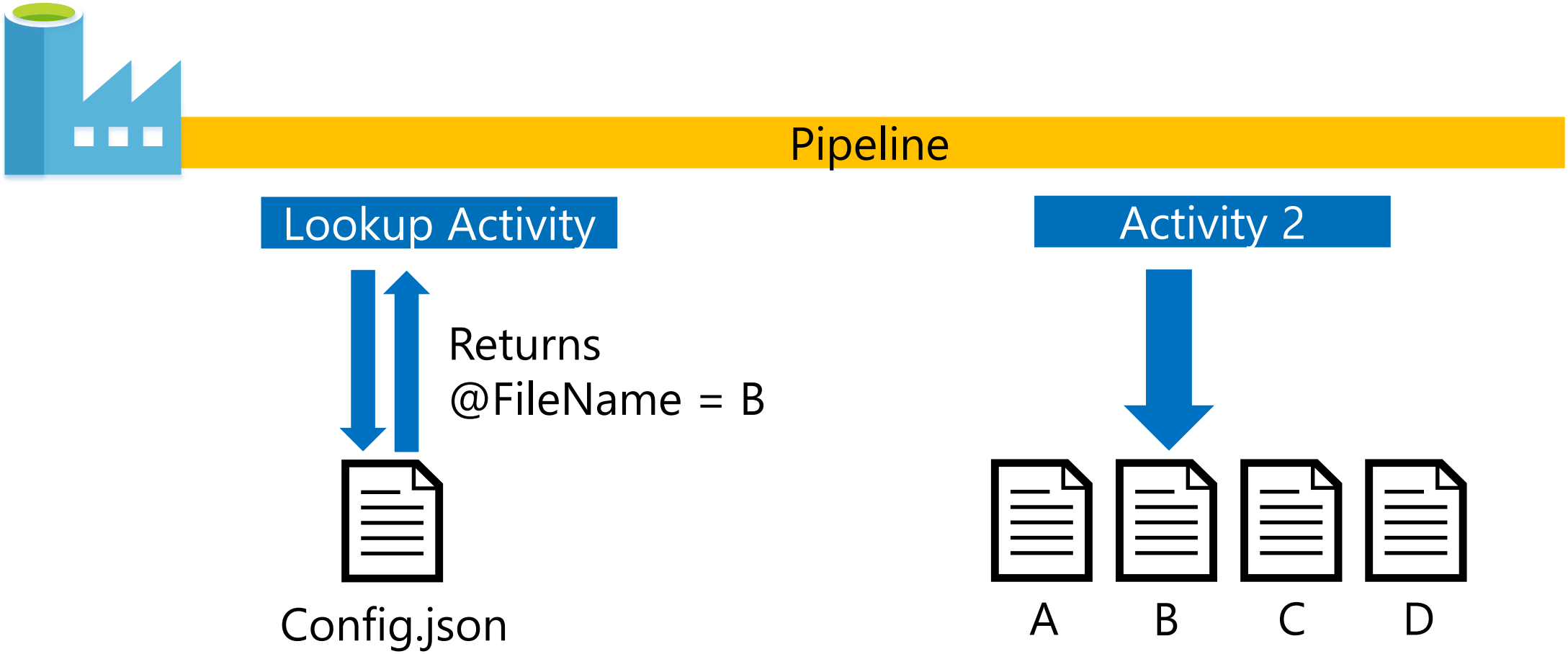
@FileName = B



Dynamically change parameters based on inputs



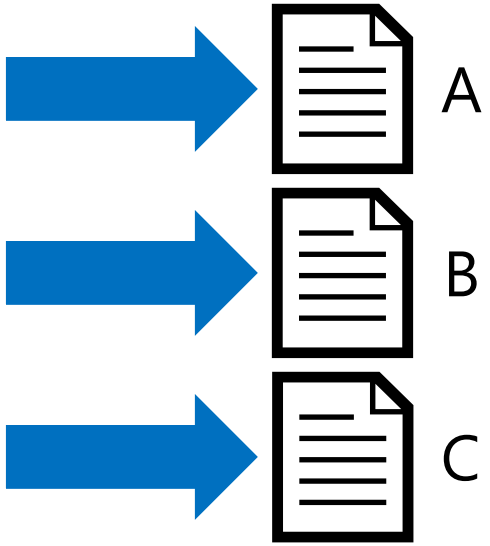
Dynamic Pipelines using Lookup Activity



ForEach Pipelines

@Files = [A,B,C]

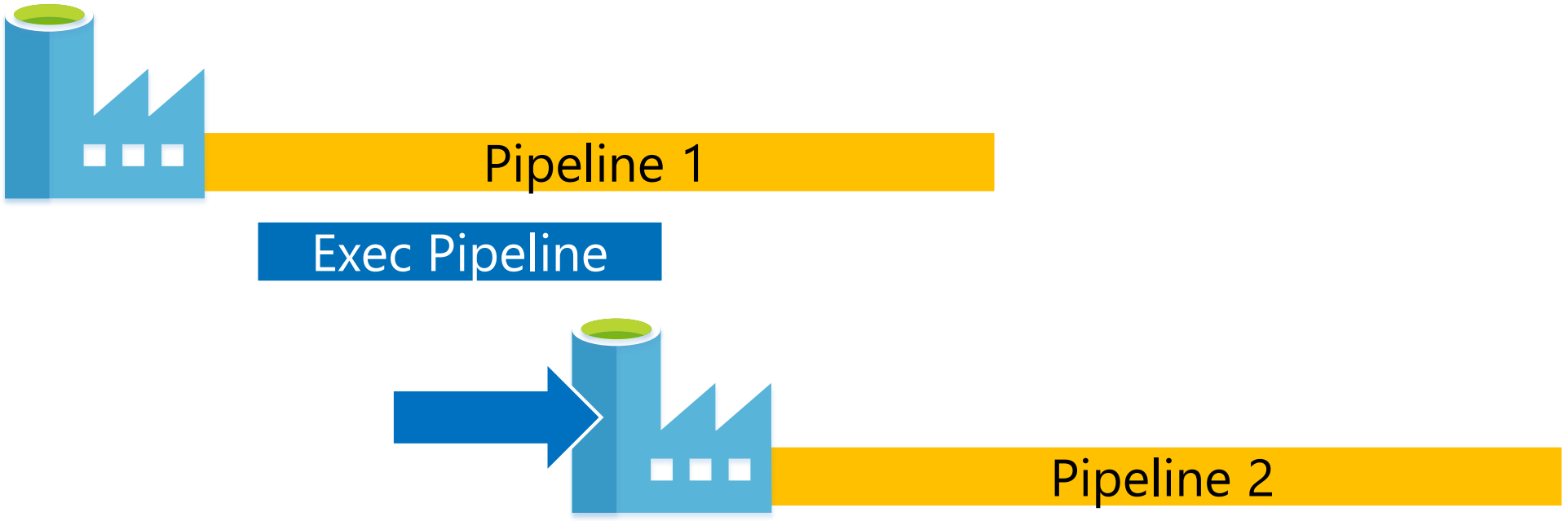
ForEach Activity



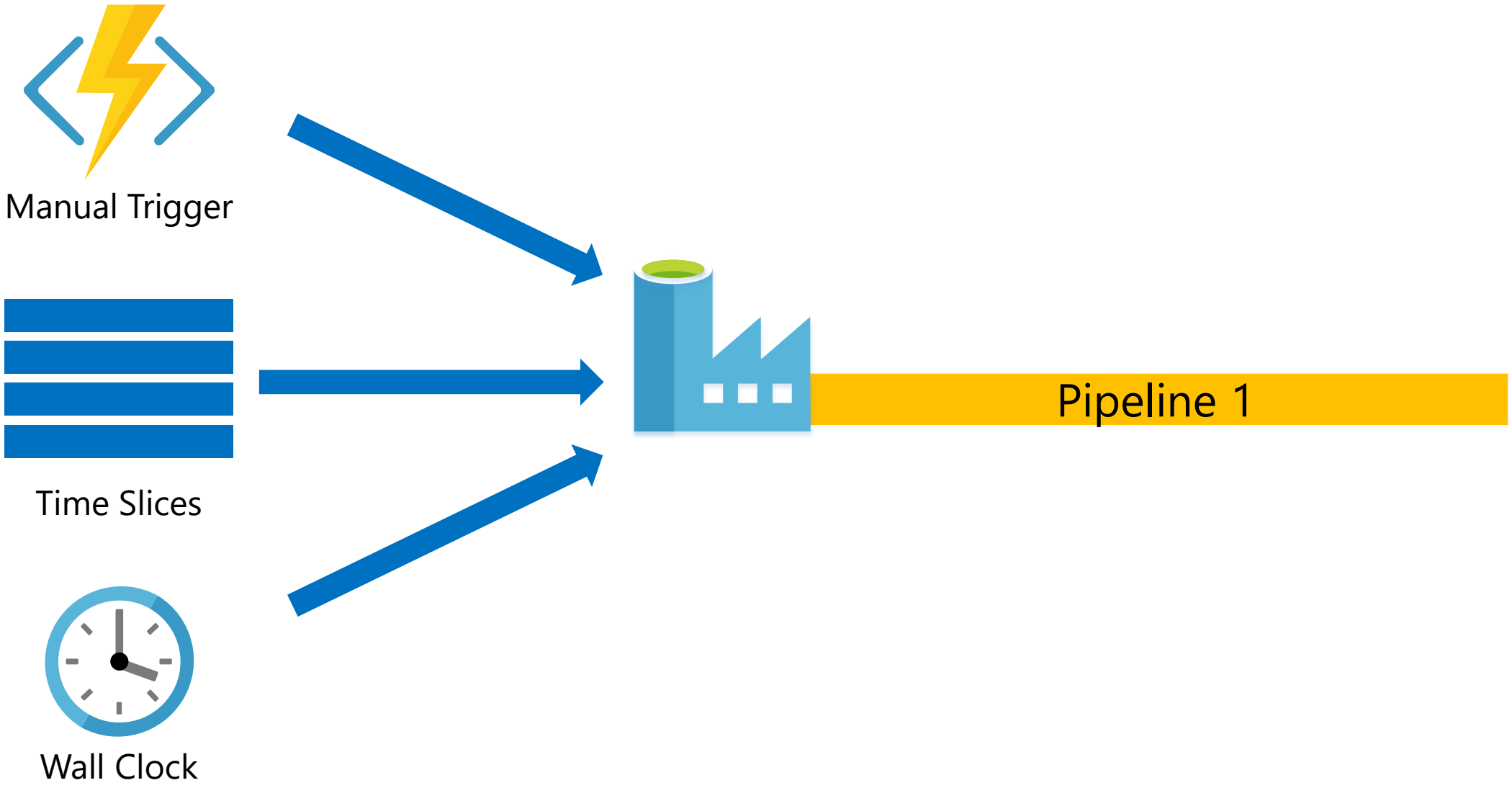
Run activity for each item in an array

(max DOP 20)

Execute Pipeline Activity



Pipeline Triggers



Demo: Dynamic Pipelines

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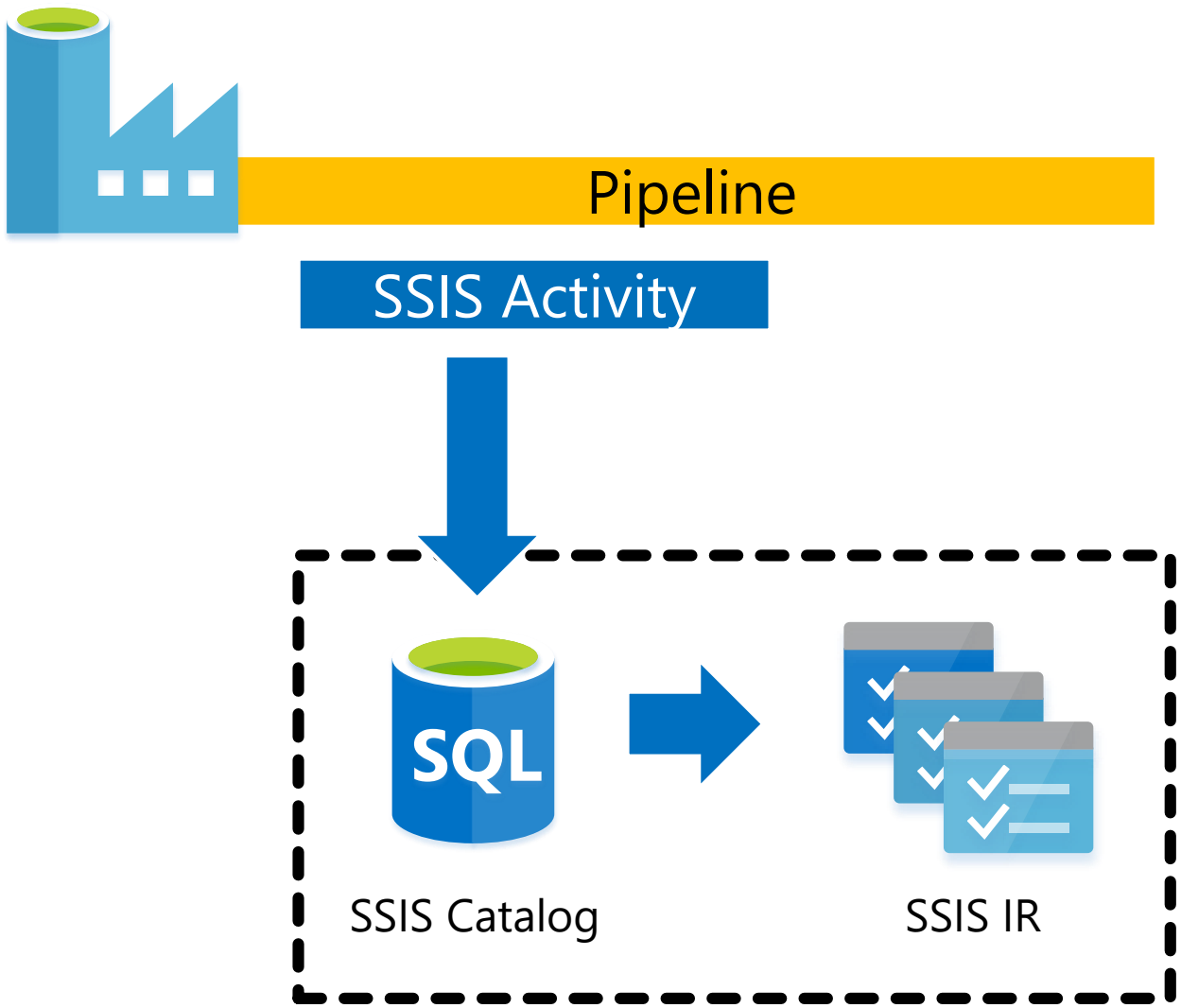
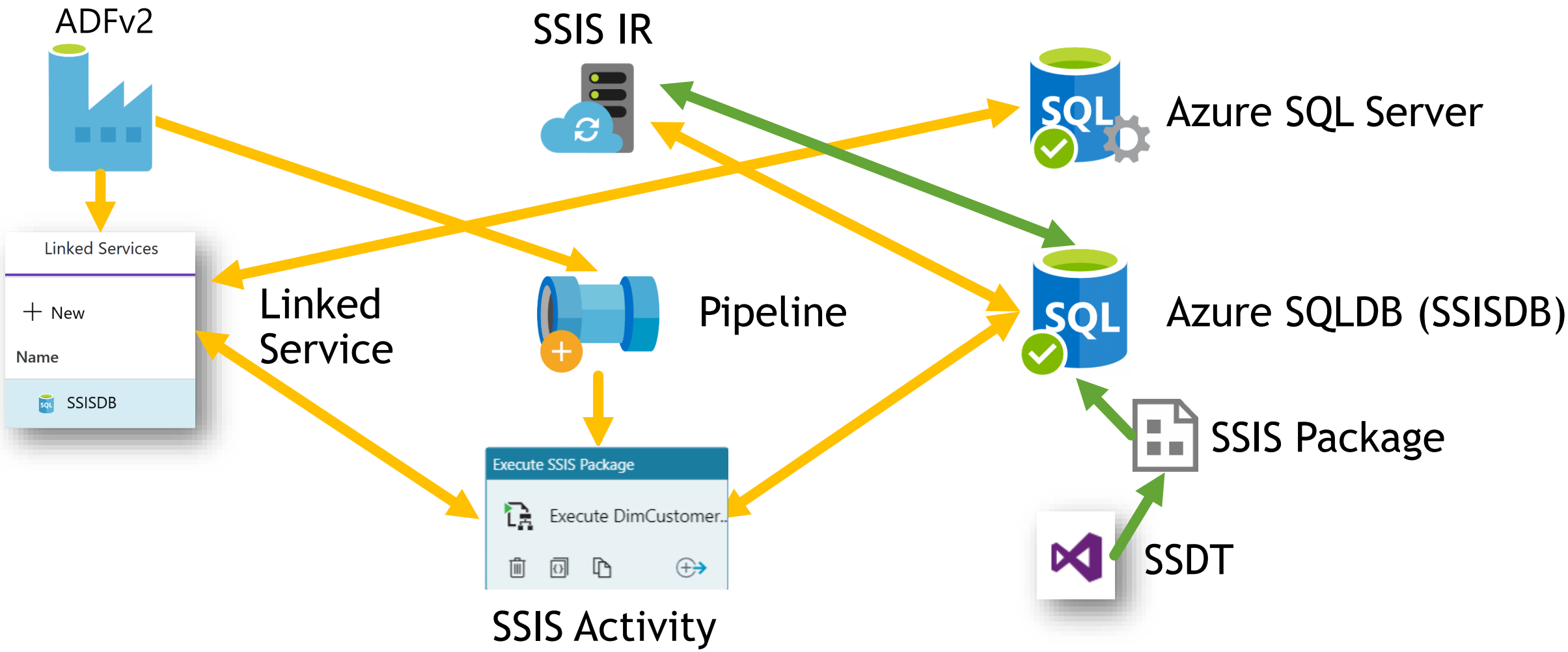
SSIS Integration Runtimes

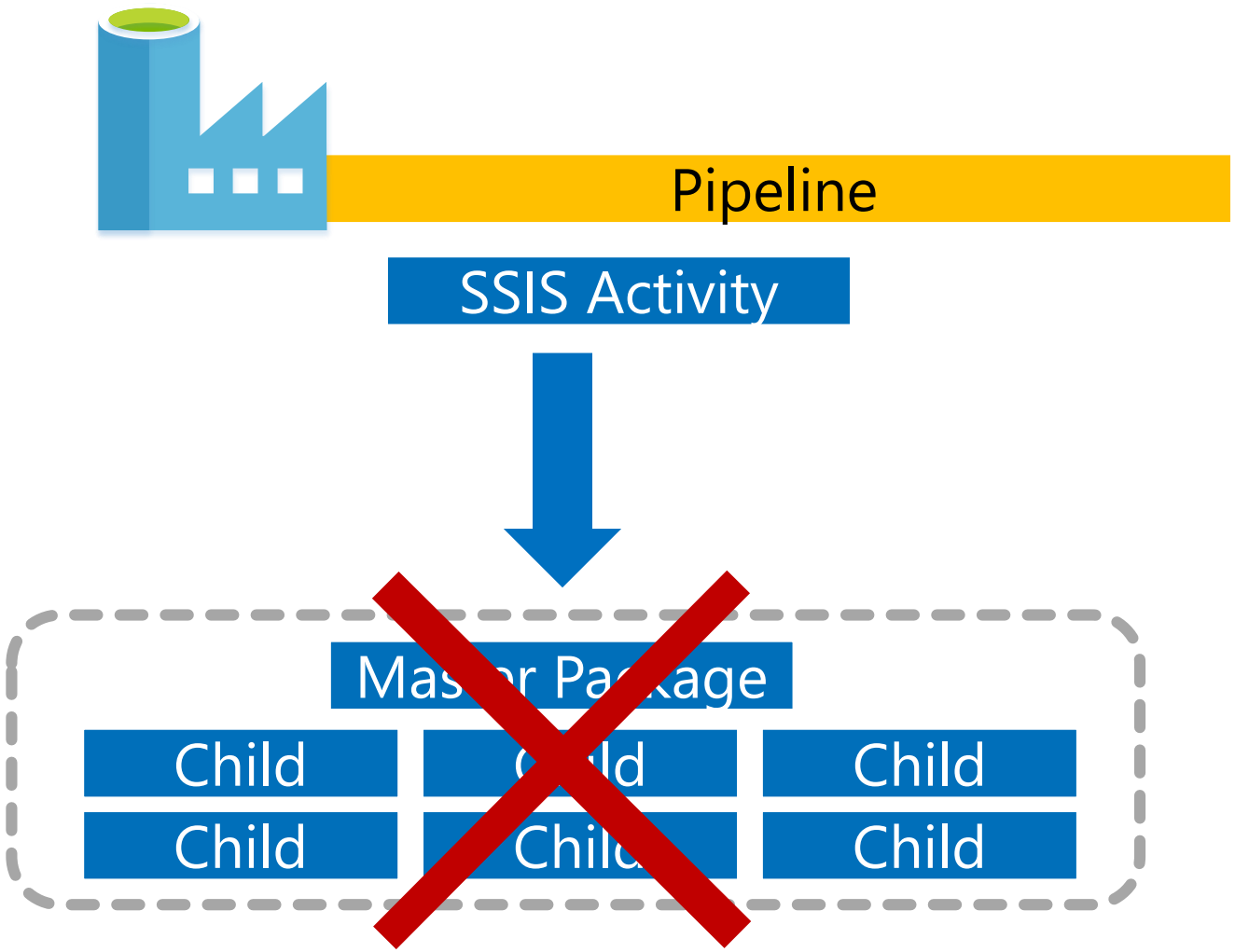


Configuring SSIS in Azure



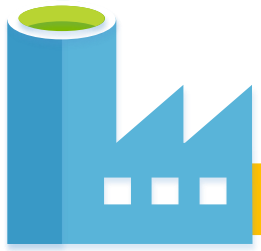
Demo: SSIS

Child Executions



This will execute the packages on a single node, rather than scale out across multiple!

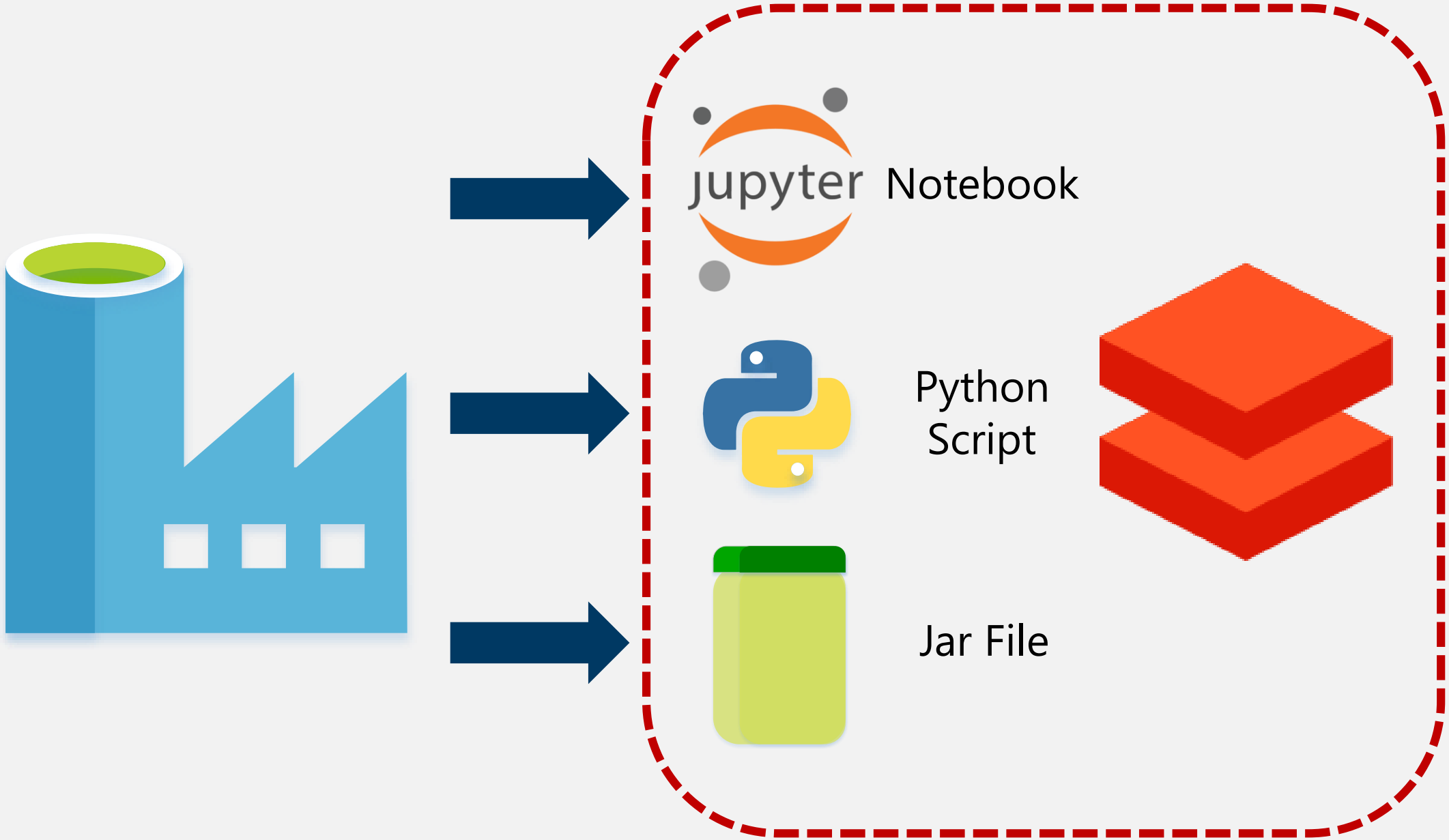
Child Executions



Pipeline

ForEach Activity

SSIS Activity	→	Child
SSIS Activity	→	Child
SSIS Activity	→	Child
SSIS Activity	→	Child
SSIS Activity	→	Child
SSIS Activity	→	Child



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But what if I don’t want to write any code?

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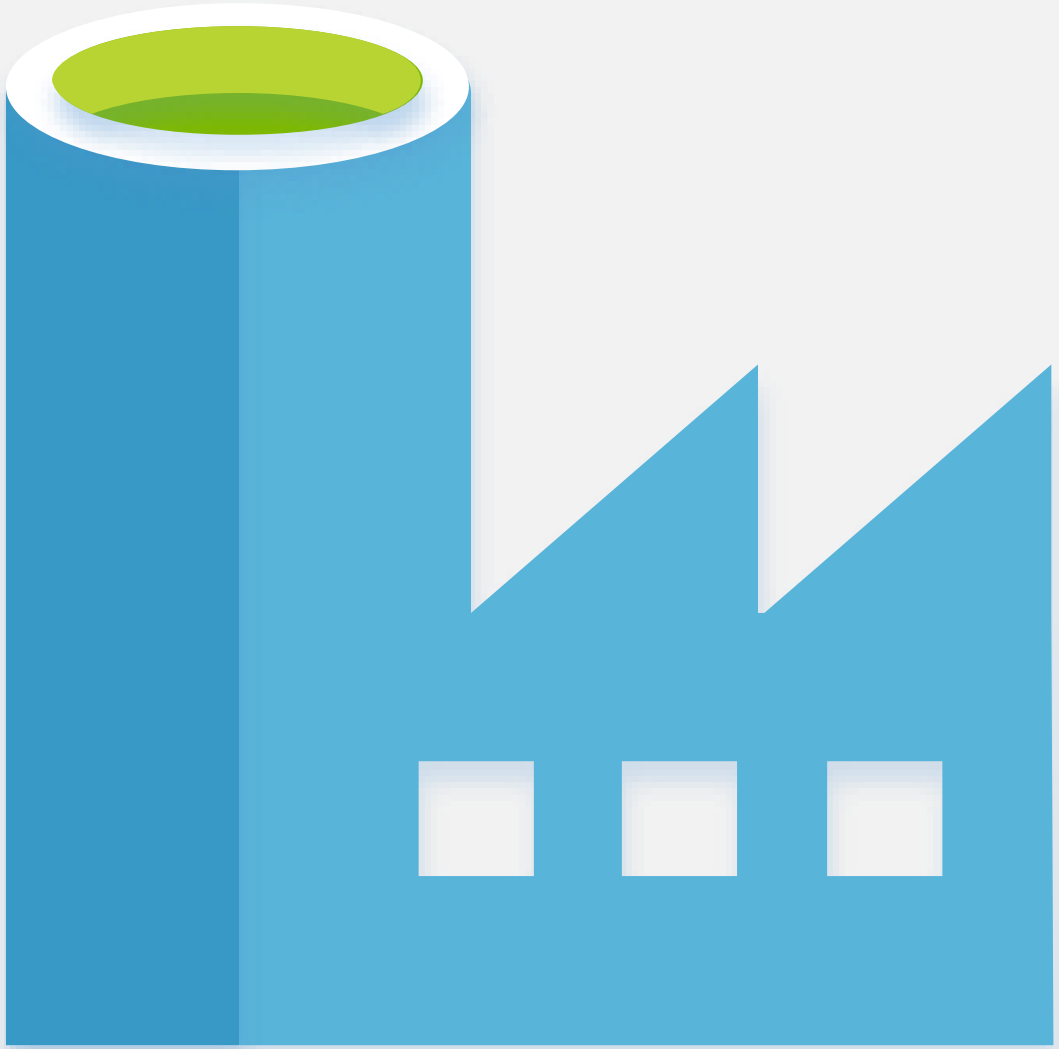

Azure Data Factory

Data Flows

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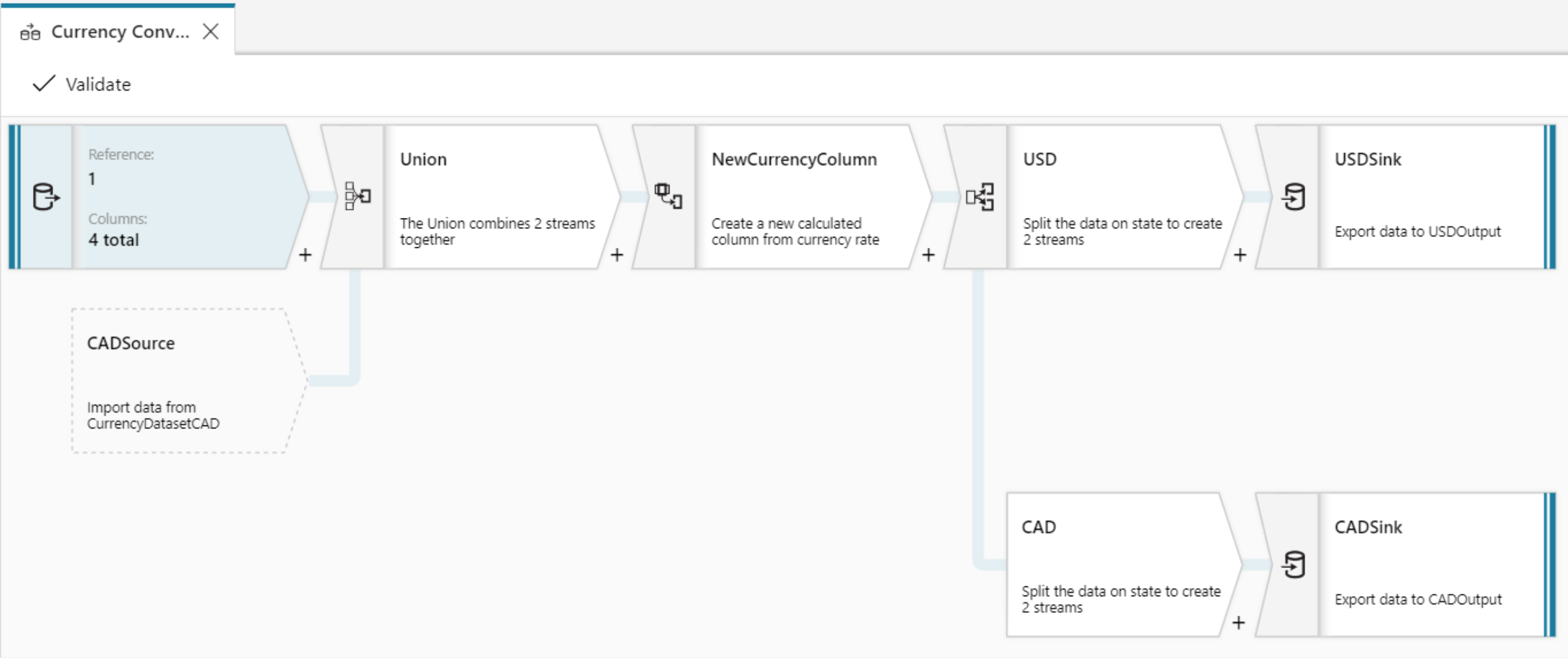
New Data Factory DataFlows can write Databricks processing packages for you!!



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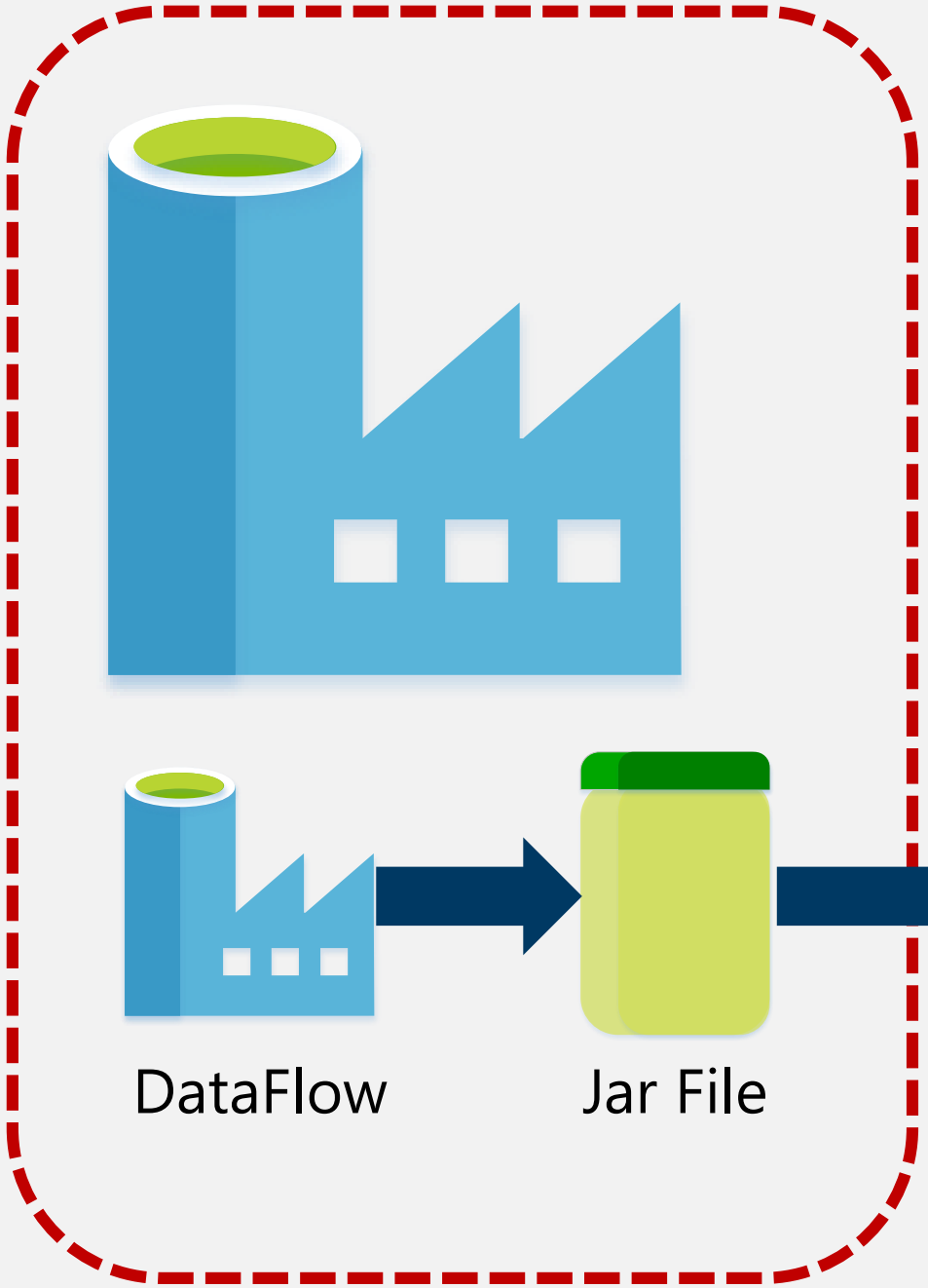
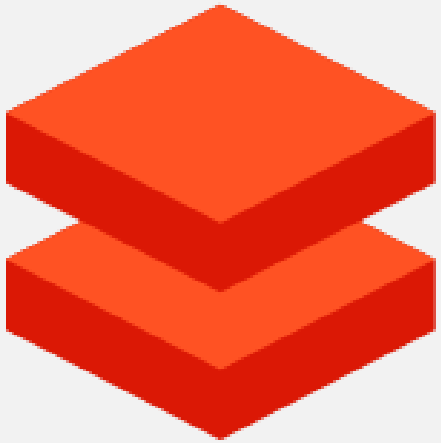


Dataflows will compile down to a JAR file which will be sent to the Databricks cluster for execution



This means it uses Scala!

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Demo: DataFlows

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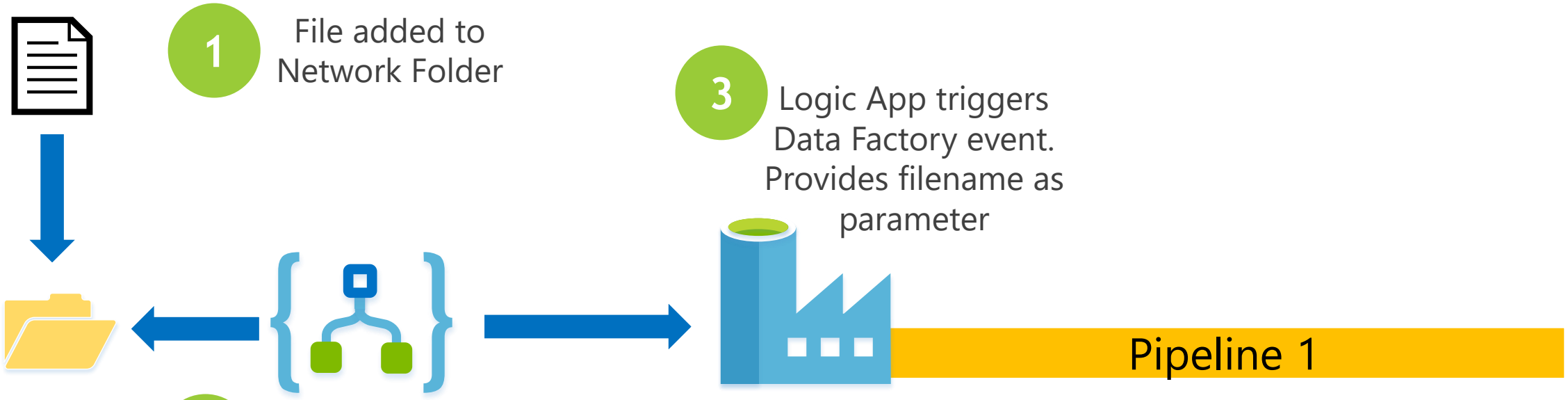
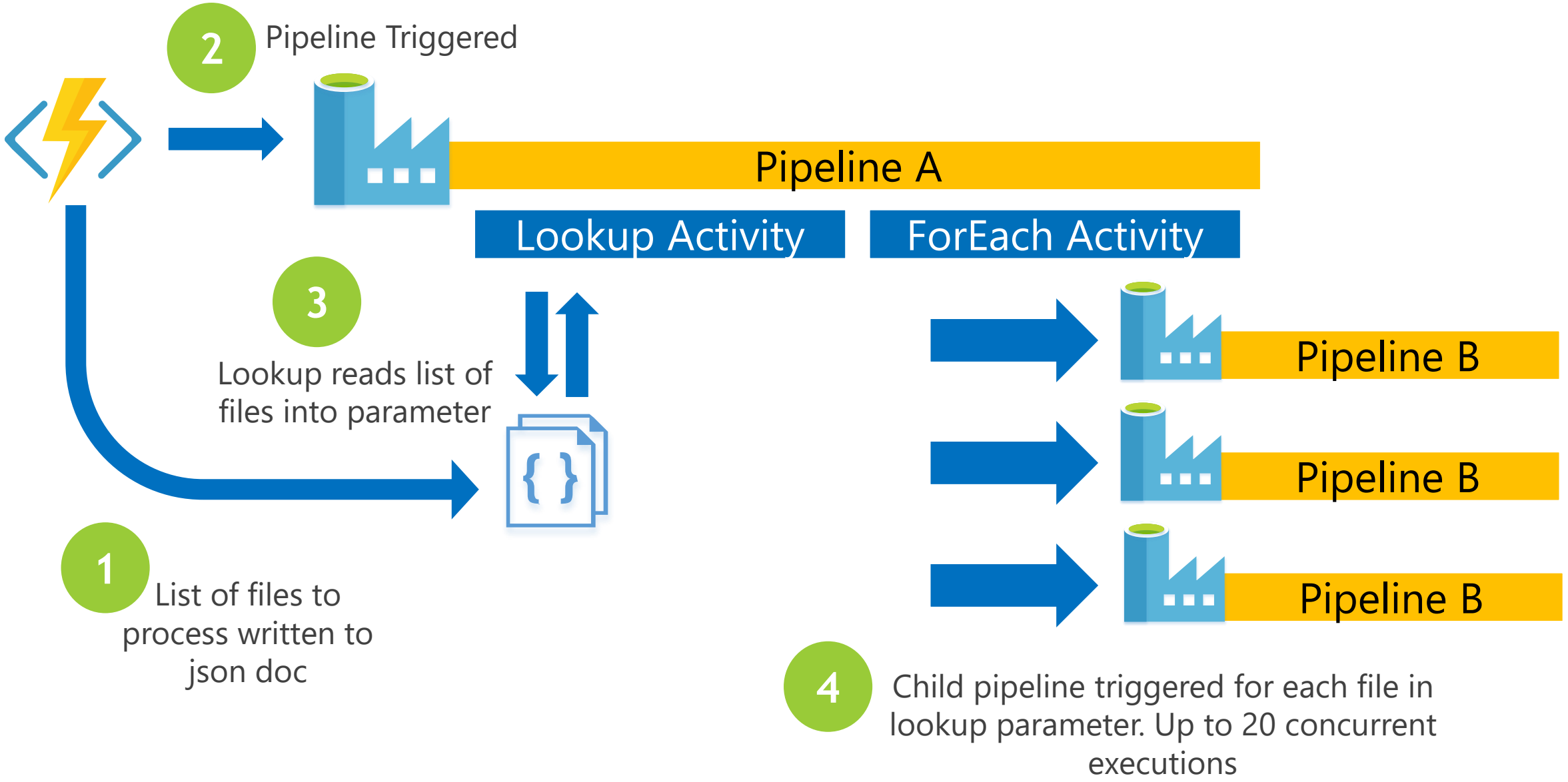
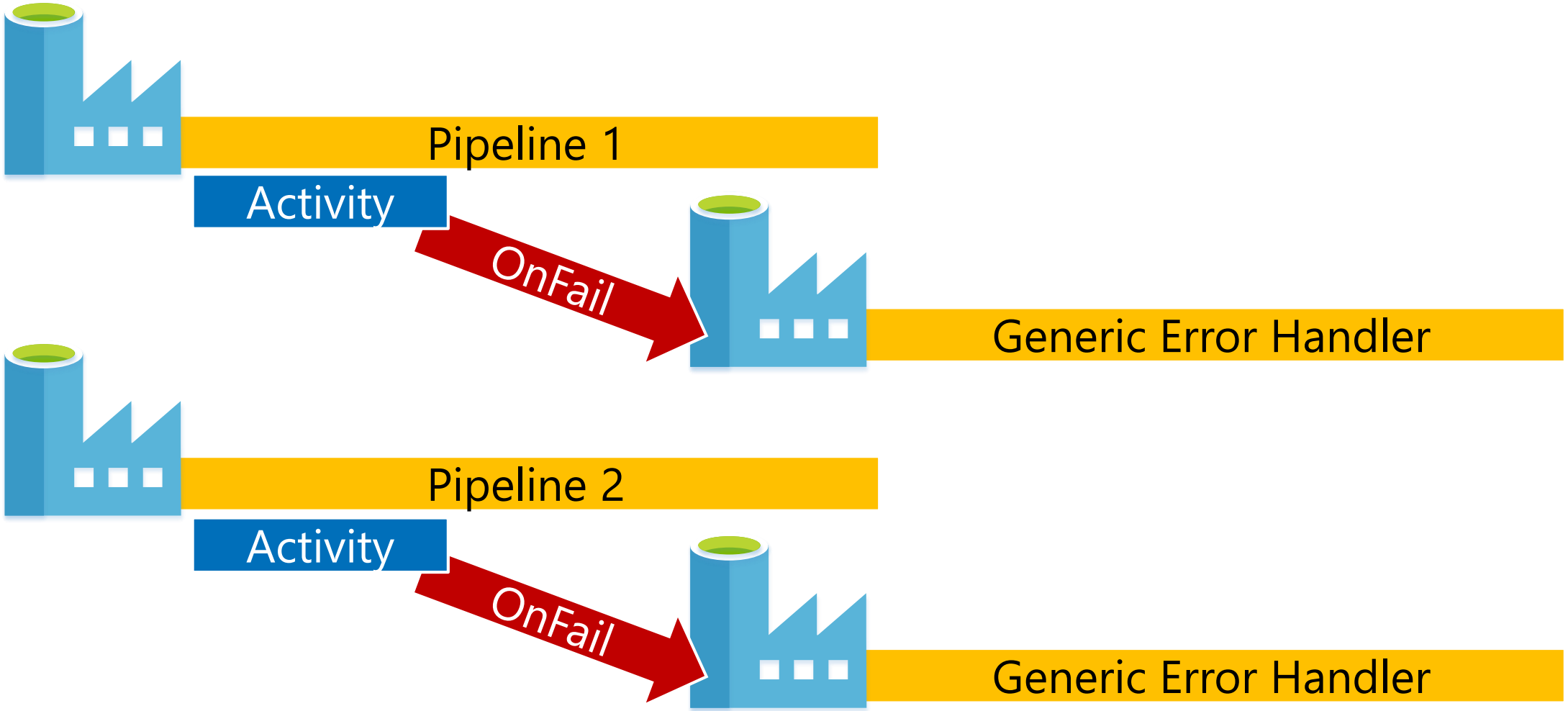
Reactive Data Processing



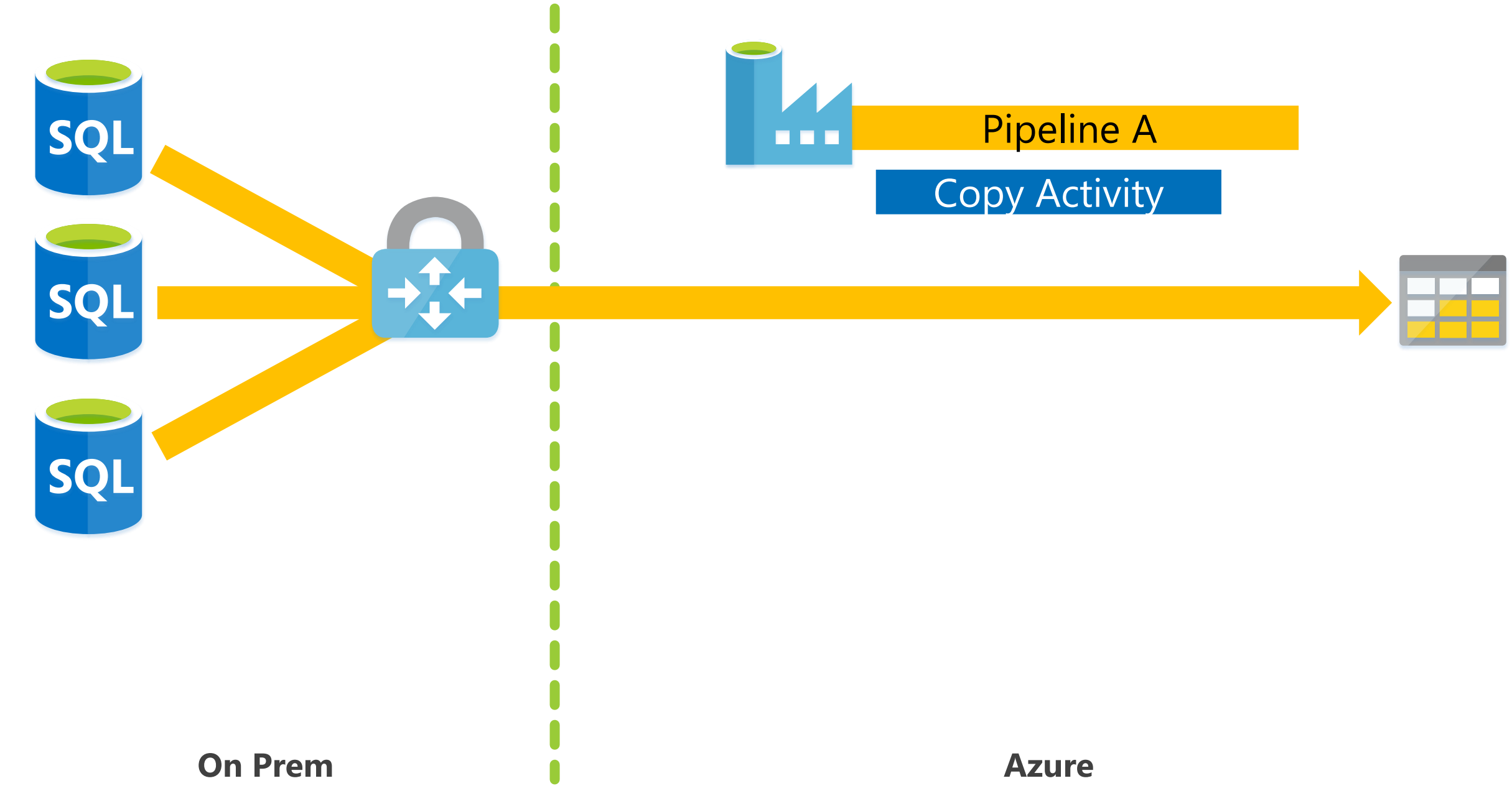
Batch Queuing



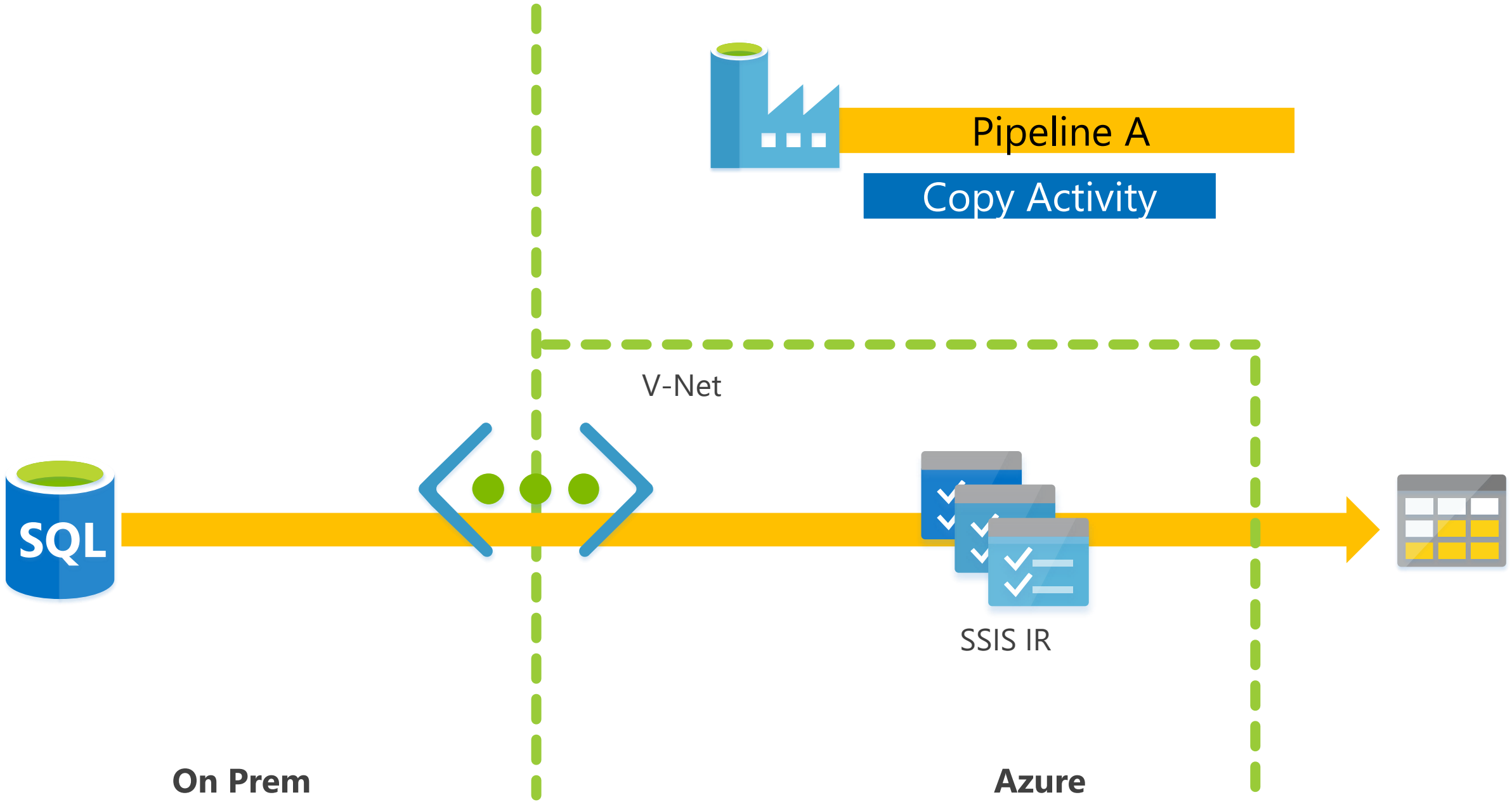
Reusable Pipelines



The SSIS Gateway

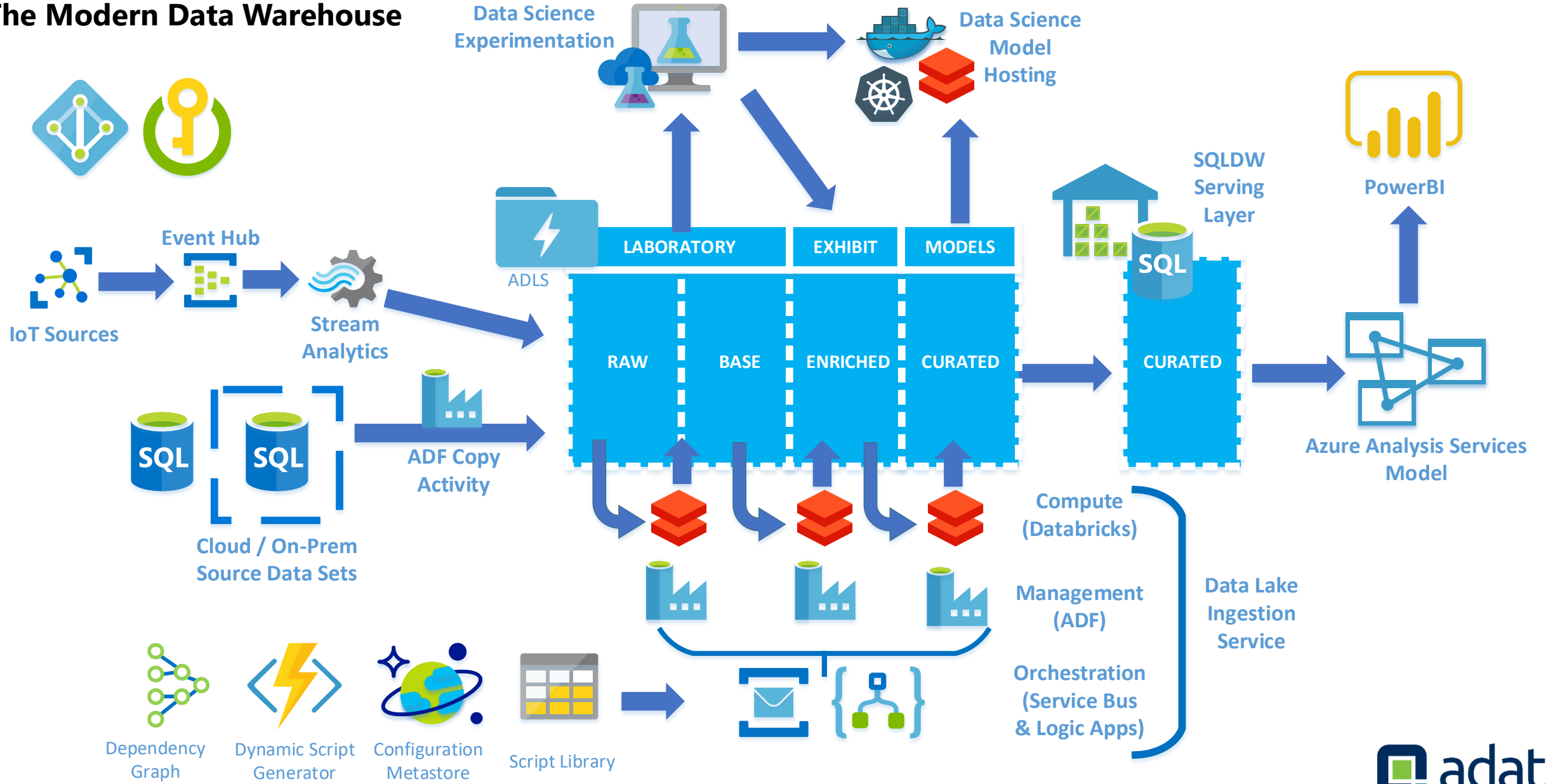


The SSIS Gateway



Why use Azure Data Factory?

The Modern Data Warehouse



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Thanks for Listening

Simon Whiteley

@MrSiWhiteley

http://blogs.adatis.co.uk