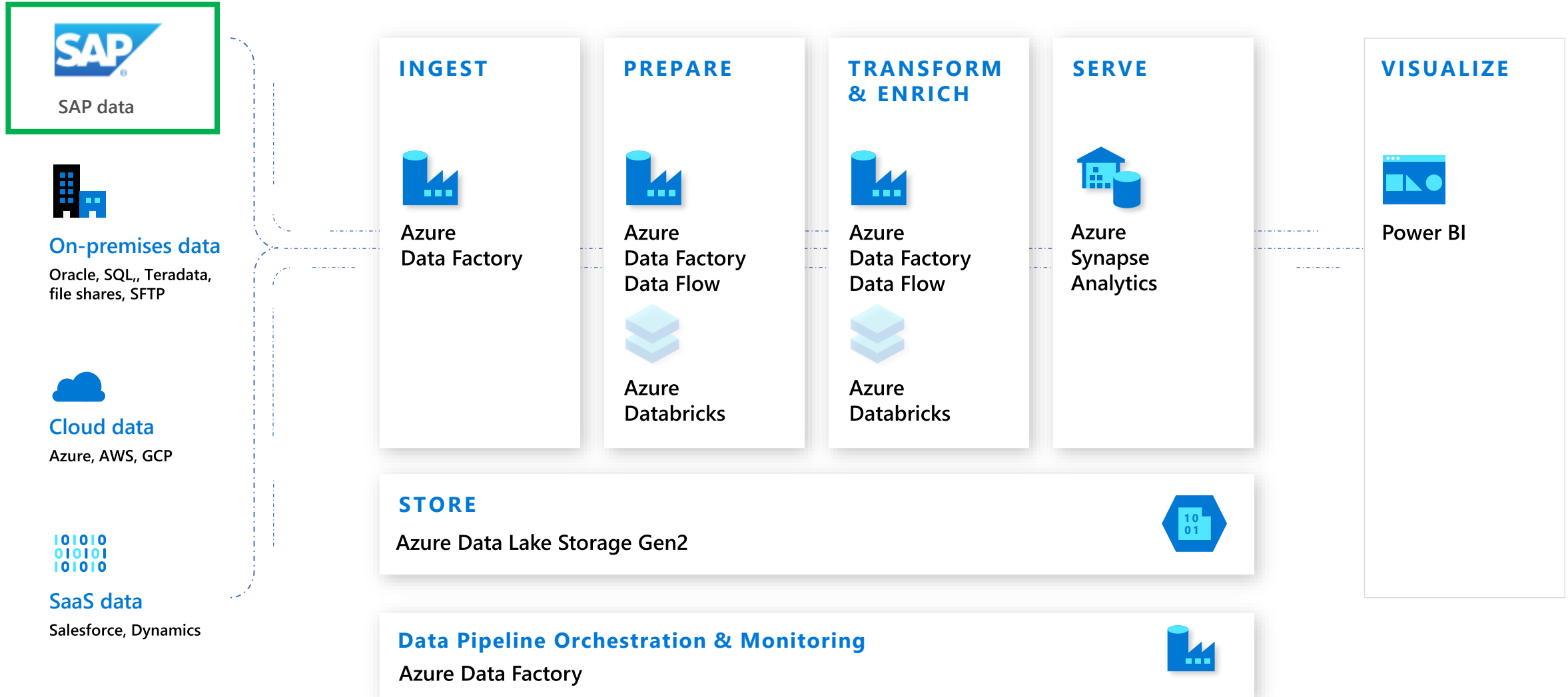




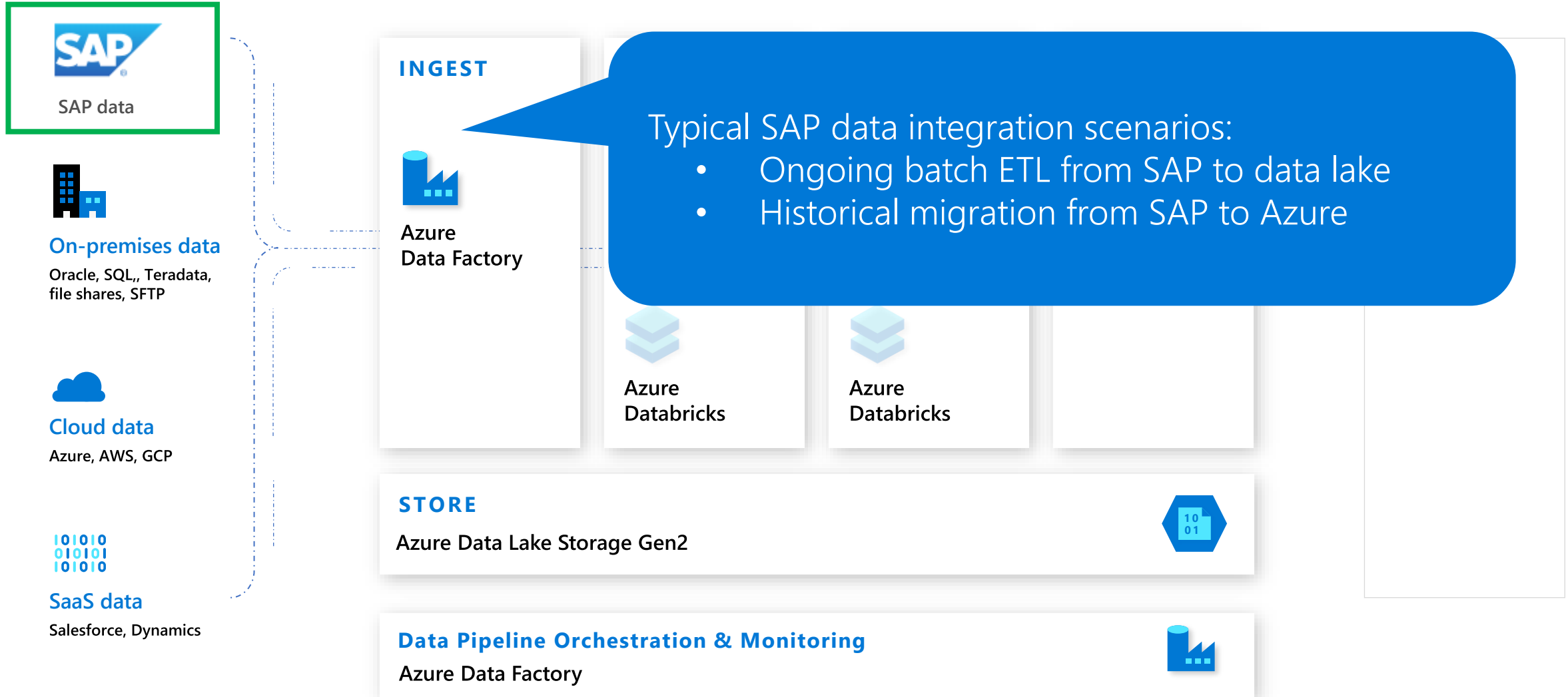
# SAP Data Integration Using Azure Data Factory

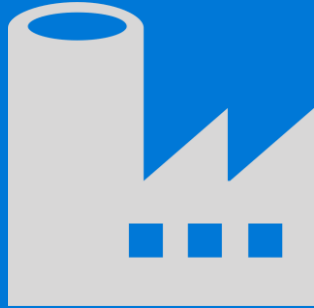
Update: Jun 28, 2020

# Modern Data Warehouse



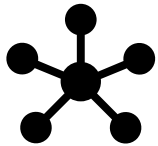
# Modern Data Warehouse





# Azure Data Factory

A fully-managed data integration service for cloud-scale analytics in Azure



Connected & Integrated

Rich connectivity  
Built-in transformation  
Flexible orchestration  
Full integration with Azure Data services



Scalable & Cost-Effective

Serverless scalability without infra mgmt  
Pay for use



Secure & Compliant

Certified compliance  
Enterprise grade security  
MSI and AKV support

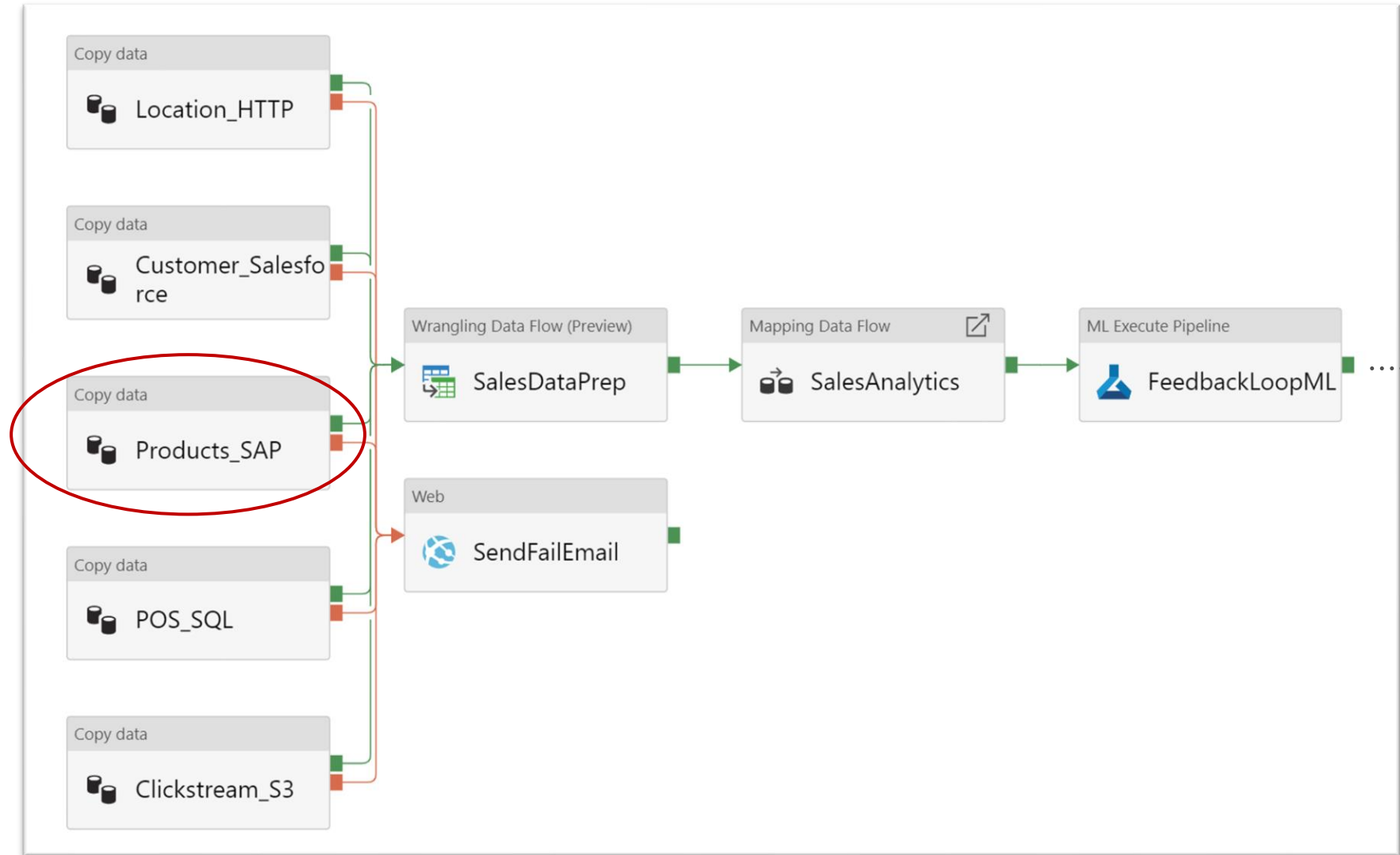


Productive

Drag & drop UI  
Single-pane-of-glass monitoring  
CI/CD model

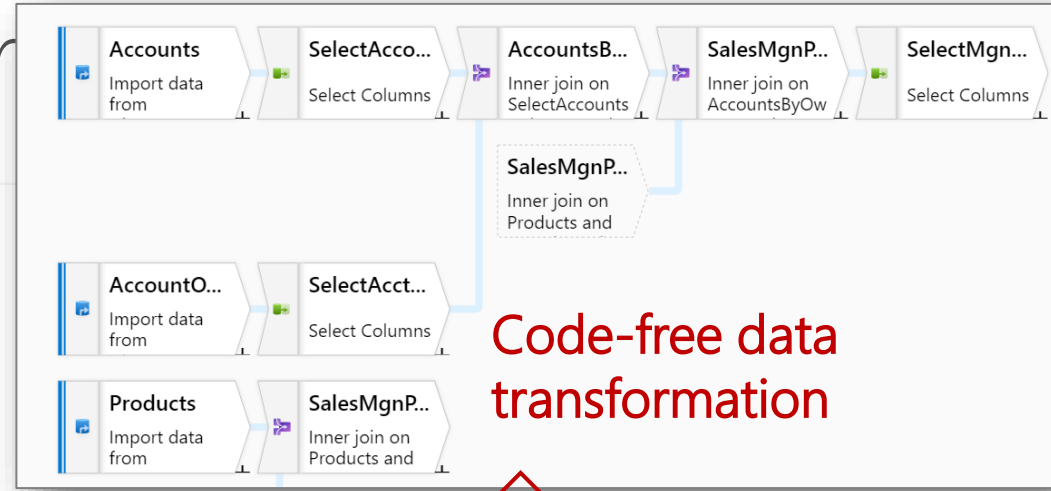
# Build Modern Data Warehouse Solution w/ SAP Data

Example:  
Sales Analytics



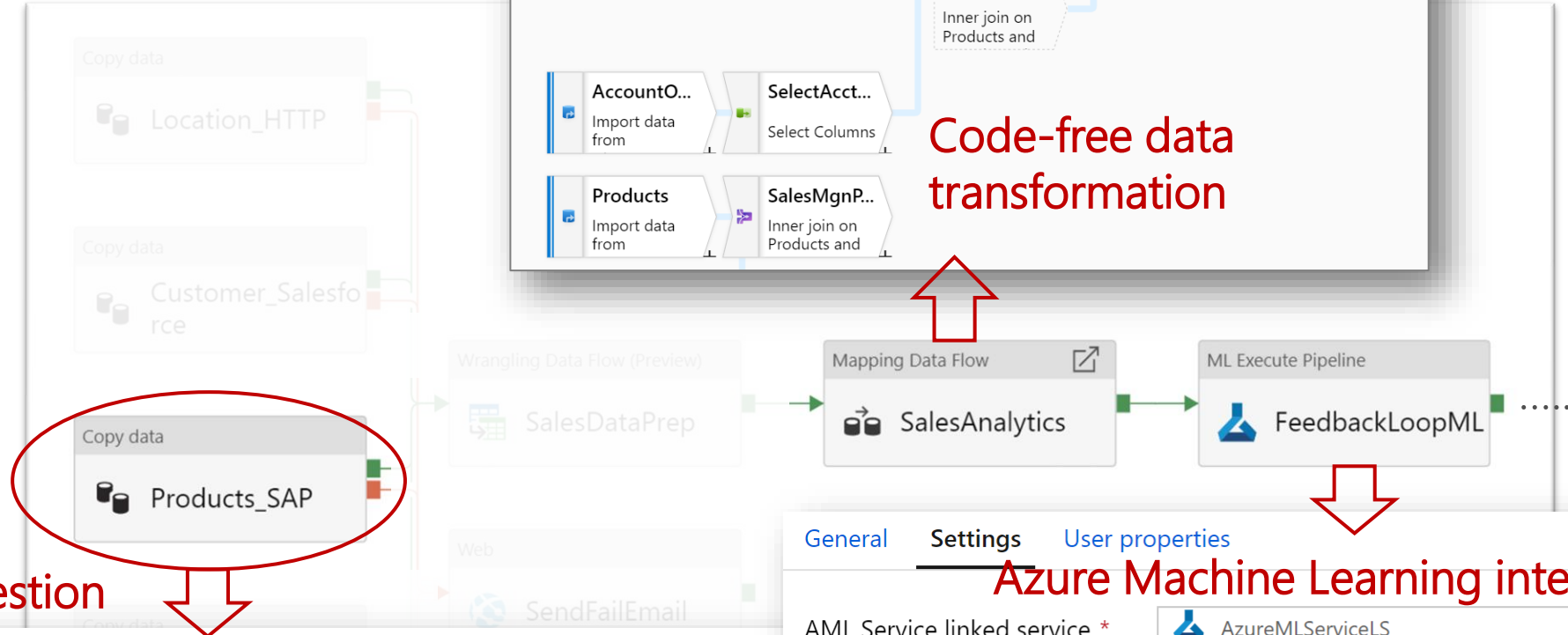
# Build Modern Data Warehouse

Data



Code-free data transformation

Example: Sales Analytics



SAP data ingestion

Azure Machine Learning integration

General Source Sink Mapping Settings User properties

Source dataset \* SapHanaTable

Use query  Table  Query

Partition option  None  Physical partitions of table  Dynamic range

Packet size (KB)

General Settings User properties

AML Service linked service \* AzureMLServiceLS

ML pipeline name Inception\_v3\_scoring

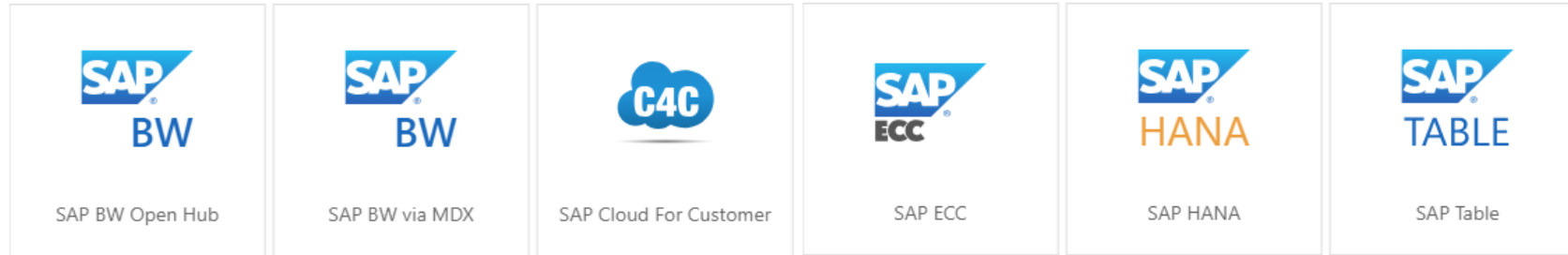
ML pipeline ID \* e1cfa52a-7943-4e4c-88b0-6ebf8b799cce

Experiment name testFromMadrid

ML pipeline parameters

# Access All Your Data

Single tool to enable data ingestion from SAP as well as other various sources, and data transformation via built-in Data Flow, integration with Databricks/HDI Insight/etc.



Azure	Database & DW		File Storage	File Formats	NoSQL	Services & Apps		Generic
Blob Storage	Amazon Redshift	Phoenix	Amazon S3	Avro	Cassandra	Amazon MWS	PayPal	HTTP
Cosmos DB – SQL API	DB2	PostgreSQL	File System	Binary	Couchbase	CDS for Apps	QuickBooks	OData
Cosmos DB – MongoDB API	Drill	Presto	FTP	Common Data Model	MongoDB	Concur	Salesforce	ODBC
ADLS Gen1	Google BigQuery	SAP BW Open Hub	Google Cloud Storage	Delimited Text		Dynamics 365	SF Service Cloud	REST
ADLS Gen2	Greenplum	SAP BW MDX	HDFS	Excel		Dynamics AX	SF Marketing Cloud	
Data Explorer	HBase	SAP HANA	SFTP	JSON		Dynamics CRM	SAP C4C	
Database for MariaDB	Hive	SAP Table		ORC		Google AdWords	SAP ECC	
Database for MySQL	Impala	Snowflake		Parquet		HubSpot	ServiceNow	
Database for PostgreSQL	Informix	Spark				Jira	SharePoint List	
File Storage	MariaDB	SQL Server				Magento	Shopify	
SQL Database	Microsoft Access	Sybase				Marketo	Square	
SQL Managed Instance	MySQL	Teradata				Office 365	Web Table	
Synapse Analytics	Netezza	Vertica				Oracle Eloqua	Xero	
Search Index	Oracle					Oracle Responsys	Zoho	
Table Storage						Oracle Service Cloud		

# Table of Content

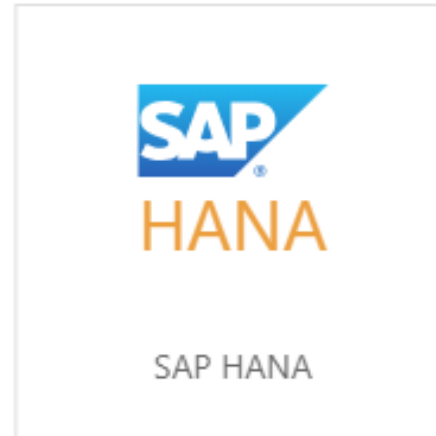
- [SAP Data Integration Overview](#)
- [SAP HANA Connector](#)
- [SAP Table Connector](#)
- [SAP BW Open Hub Connector](#)
- [SAP ECC Connector](#)
- [SAP BW MDX Connector](#)
- [More about Azure Data Factory Copy Activity](#)
- [Resources](#)



# SAP HANA Integration

*"I want to extract data from SAP HANA database" →*

ADF connector:






[\(Connector deep-dive\)](#)

# SAP BW Integration

"I want to extract data from SAP BW" →



ADF connector options	SAP Table 	SAP BW Open Hub 	SAP BW via MDX 
★ Objects to extract	Table (Transparent, Pooled, Cluster Table) and View	DSO, InfoCube, MultiProvider, DataSource, etc	InfoCubes, QueryCubes
SAP side configuration	N/A	SAP Open Hub Destination	N/A
Performance	Fast w/ built-in parallel loading based on configurable partitioning	Fast w/ built-in parallel loading based on OHD specific schema	Slower
Suitable workload	Large volume	Well-thought-through workload Large volume	Exploratory workload Small volume

[\(Connector deep-dive\)](#)

[\(Connector deep-dive\)](#)



[\(Connector deep-dive\)](#)

NOTE: SAP BW4/HANA is not supported now.

# SAP ECC, S/4 HANA, SAP Application Integration

"I want to extract data from SAP ECC, S/4 HANA, or other SAP applications" →



ADF connector options	SAP Table 	SAP ECC 
★ Objects to extract	Table (Transparent, Pooled, Cluster Table) and View	OData entities exposed via SAP Gateway (BAPI, ODP)
SAP side configuration	N/A	SAP Gateway
Performance	Fast w/ built-in parallel loading	Slower
Suitable workload	Large volume	Small volume

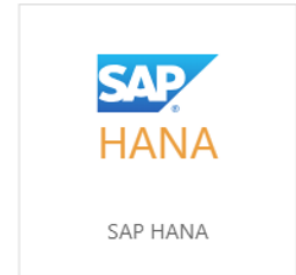
([Connector deep-dive](#))

([Connector deep-dive](#))

*If you push ECC data into SAP HANA/BW, you can also go through SAP HANA/BW connector options.*

# SAP HANA Connector

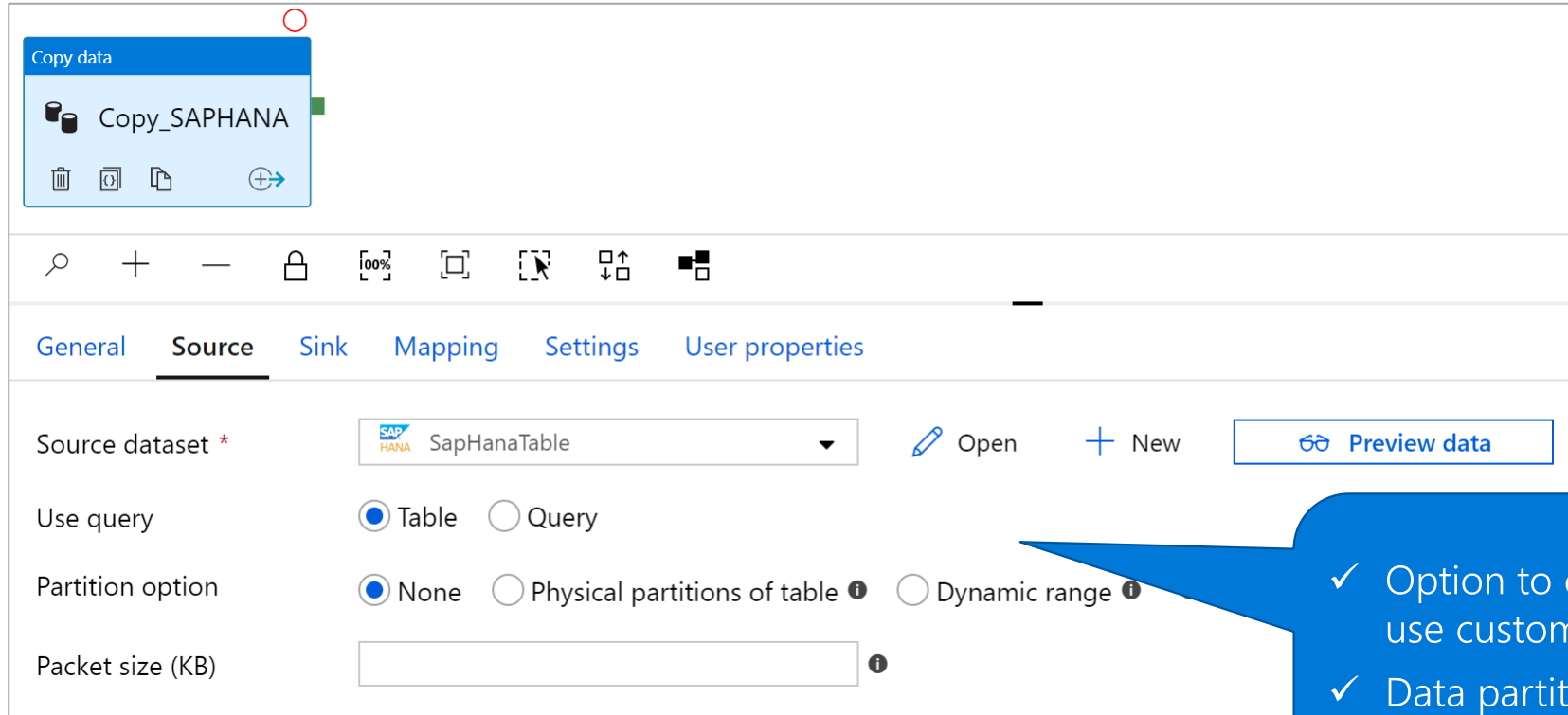
# SAP HANA Connector



Suitable scenario: ingest data from SAP HANA.

Supported versions	<ul style="list-style-type: none"><li>• All SAP HANA versions, on-prem or in the cloud</li></ul>
Supported SAP objects	<ul style="list-style-type: none"><li>• HANA Information Models (Analytic/Calculation views)</li><li>• Row &amp; Column Tables</li></ul>
Supported authentications	<ul style="list-style-type: none"><li>• <b>Basic</b> – username &amp; password</li><li>• <b>Windows</b> – Single Sign-On via Kerberos-constrained delegation</li></ul>
Mechanism and prerequisites	<ul style="list-style-type: none"><li>• Built on top of <b>SAP's HANA ODBC driver</b></li><li>• Pull data via <b>custom query</b></li><li>• Run on Self-hosted Integration Runtime</li></ul>
Performance & Scalability	<ul style="list-style-type: none"><li>• <b>Built-in parallel loading</b> option based on configurable data partitioning <b>NEW</b></li><li>• Performant to handle <b>TB level data</b> with <b>hundred millions to billion of rows</b> per run, observed several to several dozens MB/s (varies per customers' data/env.)</li></ul>

# SAP HANA Connector



The screenshot shows the configuration window for the SAP HANA Connector. At the top left, there is a "Copy data" dialog box with a title bar and a close button. Below it is a toolbar with icons for search, zoom in, zoom out, lock, 100% zoom, crop, pan, and refresh. The main configuration area has tabs for "General", "Source", "Sink", "Mapping", "Settings", and "User properties". The "Source" tab is active, showing the following settings:

- Source dataset \*: SapHanaTable (dropdown menu) with "Open", "New", and "Preview data" buttons.
- Use query:  Table  Query
- Partition option:  None  Physical partitions of table ⓘ  Dynamic range ⓘ
- Packet size (KB): [ ] ⓘ

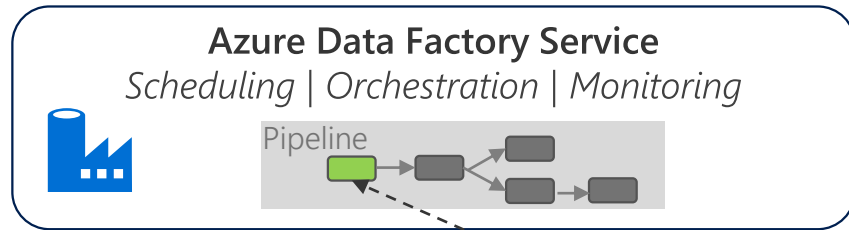
- ✓ Option to copy entire table or use custom query
- ✓ Data partition options for parallel copy to boost perf

# SAP HANA Connector – How It Works



←---→ Command and Control

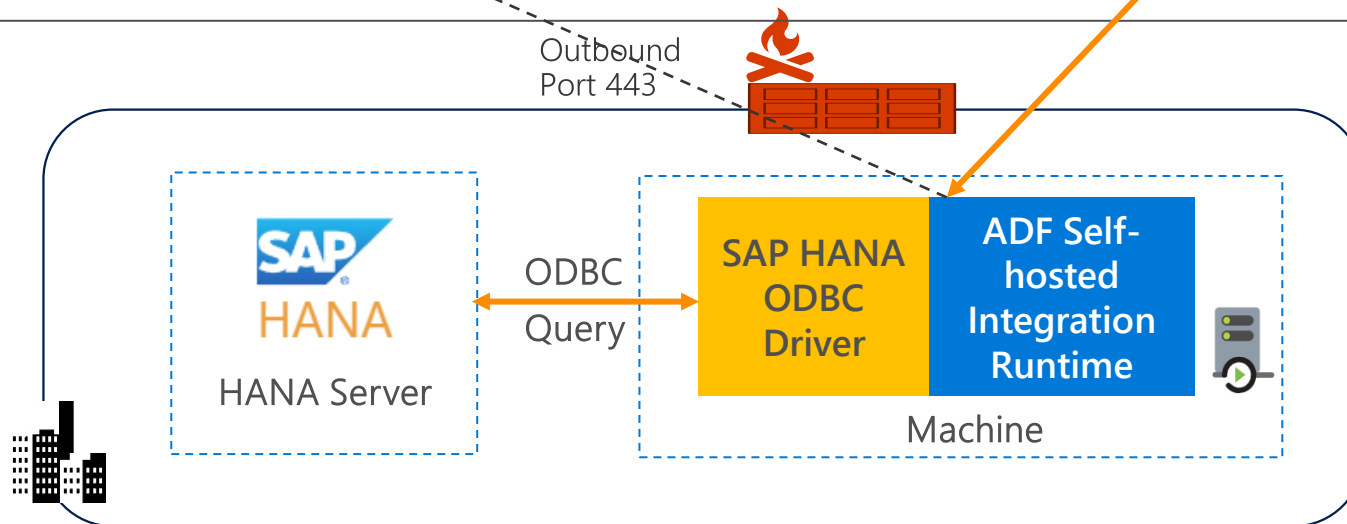
↔ Data



Azure Data Stores

Azure

On-prem or  
Azure VNET



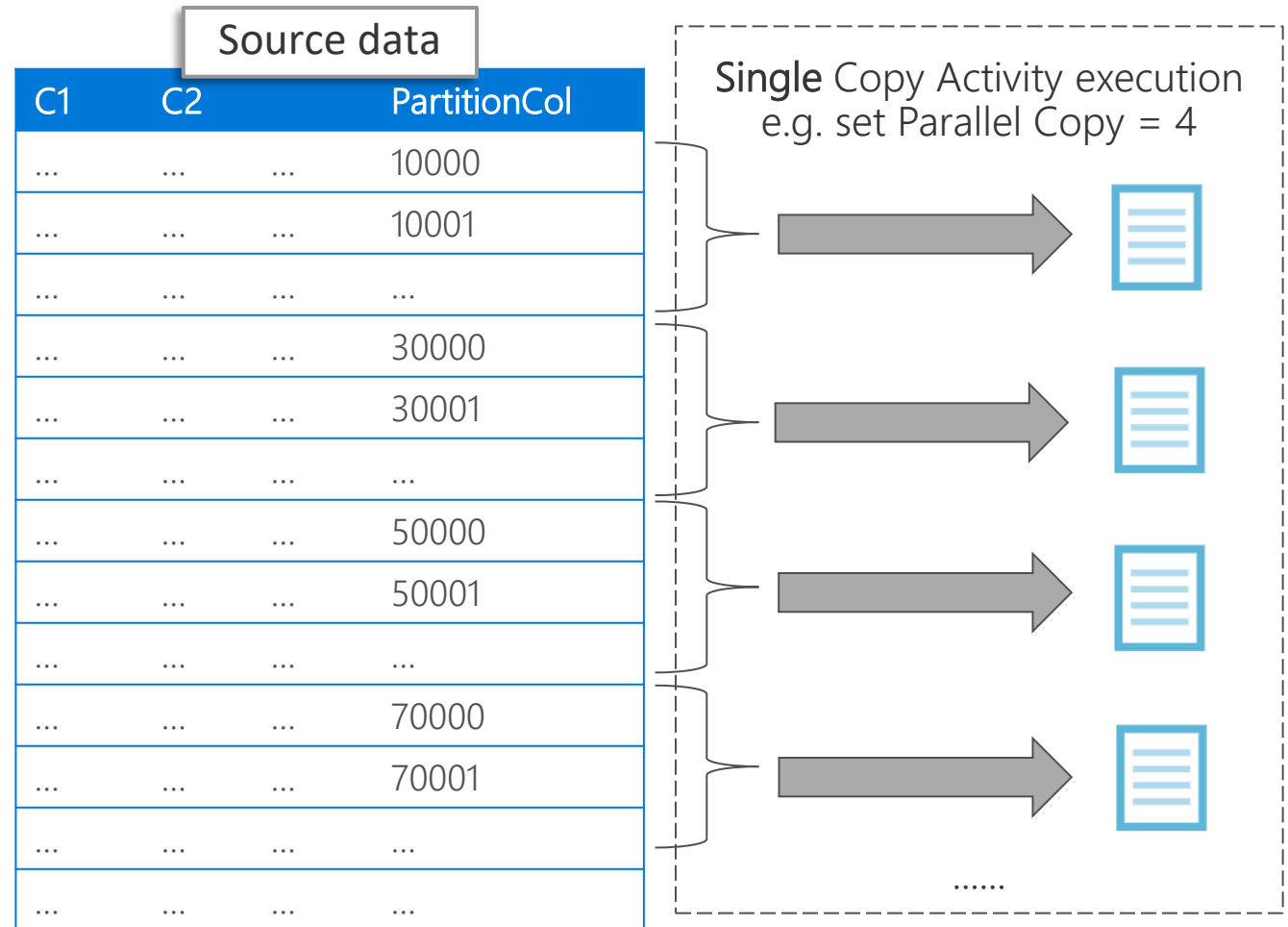
# SAP HANA Connector – Built-in Parallel Loading



For each copy activity run, ADF issue the specified query to source to retrieve the data.

## Out-of-box optimization for SAP HANA:

- Built-in **parallel copy by partitions** to boost performance for large table ingestion.
- Options of HANA physical table partition and dynamic range partition.





# SAP HANA Connector – Incremental Copy



Pattern I: "my data has timestamp column e.g. last modified time"

Solution: tumbling window trigger + dynamic query with system variables. Get started via Copy Data Tool.

Example: scheduled daily incremental copy starting at midnight

C1	C2	...	LastModifiedDate
...	...	...	...
...	...	...	2019/03/18
...	...	...	2019/03/18
...	...	...	.....
...	...	...	2019/03/18
...	...	...	2019/03/19
...	...	...	2019/03/19
...	...	...	...
...	...	...	2019/03/19
...	...	...	...

```
SELECT * FROM MyTable
WHERE LastModifiedDate >= @formatDateTime(pipeline().parameters.windowStartTime, 'yyyy/MM/dd')
AND LastModifiedDate < @formatDateTime(pipeline().parameters.windowEndTime, 'yyyy/MM/dd')
```

Execution start time: 2019/03/19 00:00:00 (window end time)

Delta extraction: last modified time between 2019/03/18 – 2019/03/19

Execution start time: 2019/03/20 00:00:00 (window end time)

Delta extraction: last modified time between 2019/03/19 – 2019/03/20

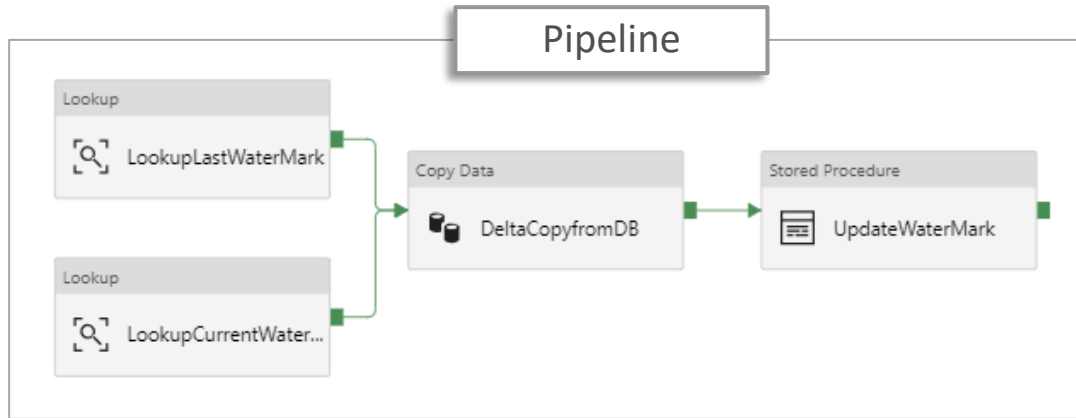
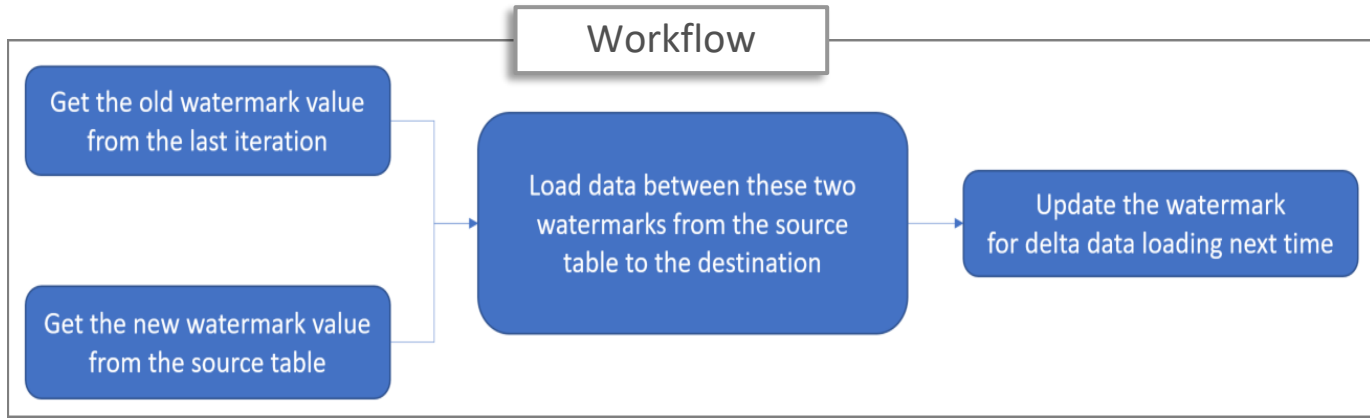
# SAP HANA Connector – Incremental Copy



Pattern II: "my data has an incremental column e.g. ID"

Solution: external control table/file + high watermark.

*Get started via solution template "Delta copy from Database".*



Pattern III: "my data is small in size as dimension data"

Solution: full copy and overwrite

# SAP Table Connector

# SAP Table Connector



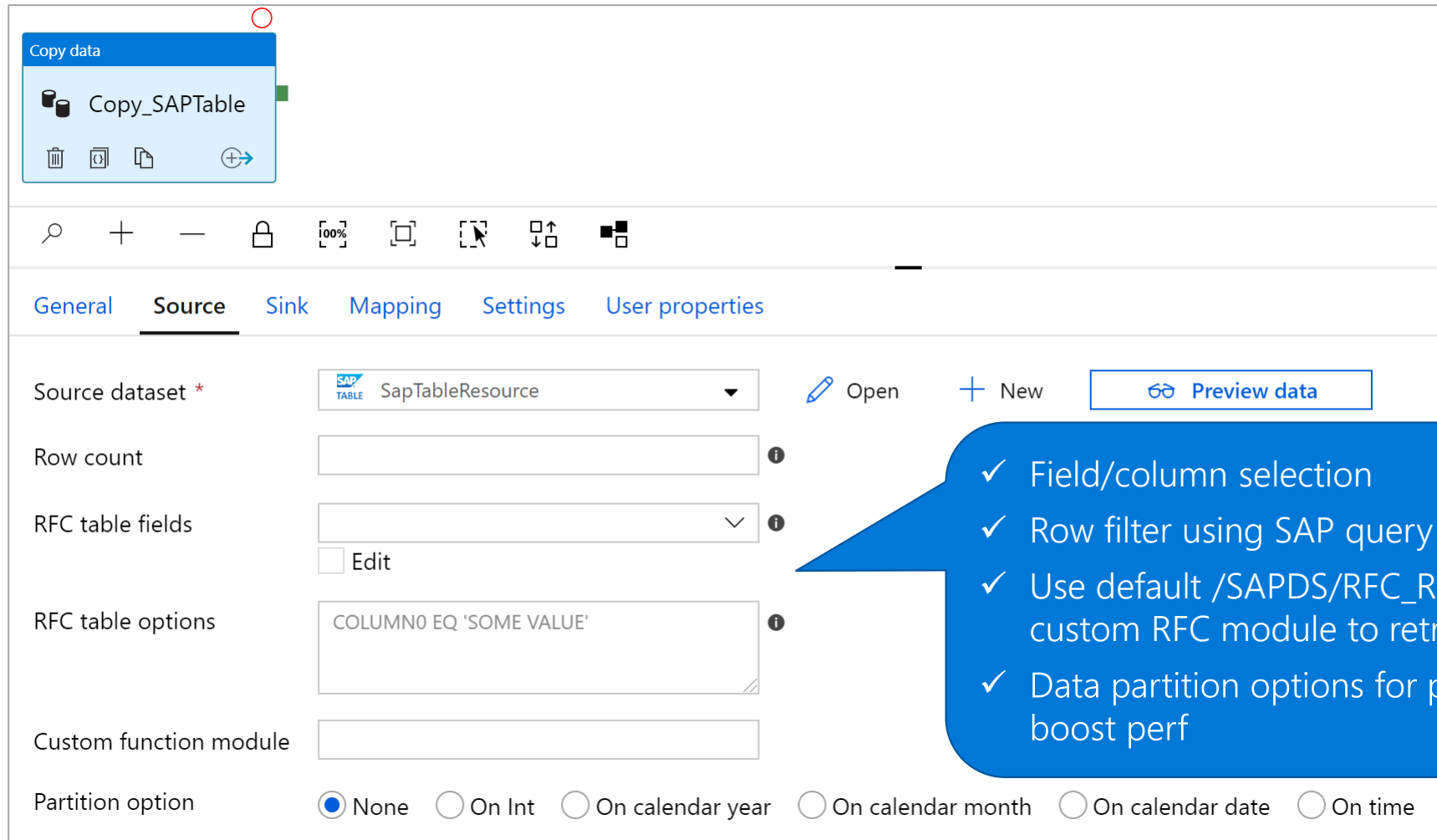
Suitable scenario: ingest data from SAP Table for SAP ECC, S/4 HANA, BW, or other application in Business Suite.

Supported versions	<ul style="list-style-type: none"><li>• SAP ECC or other applications in Business Suite version 7.01 and above, on-prem or in the cloud</li><li>• S/4 HANA</li></ul>
Supported SAP objects	<ul style="list-style-type: none"><li>• SAP Transparent Table, Pooled Table, Cluster Table and View</li></ul>
Supported server type	<ul style="list-style-type: none"><li>• Connect to <b>Application Server</b> or <b>Message Server</b></li></ul>
Supported authentications	<ul style="list-style-type: none"><li>• <b>Basic</b> – username &amp; password</li><li>• <b>SNC (Secure Network Communications)</b></li></ul>
Mechanism and prerequisites	<ul style="list-style-type: none"><li>• Built on top of <b>SAP .NET Connector 3.0</b>, pull data via <b>NetWeaver RFC</b> w/ field selection &amp; row filter</li><li>• Run on Self-hosted Integration Runtime</li></ul>
Performance & Scalability	<ul style="list-style-type: none"><li>• <b>Built-in parallel loading</b> option based on configurable data partitioning</li><li>• Performant to handle <b>TB level data</b>, with <b>per run dozen millions to billion of rows</b> &amp; observed several to 20s MB/s (varies per customers' data/env.)</li></ul>

# SAP Table Connector



SAP Table



The screenshot shows the SAP Table Connector configuration interface. At the top, there is a 'Copy data' dialog box with a 'Copy\_SAPTable' entry. Below this is a toolbar with various icons for search, zoom, and window management. The main configuration area has tabs for 'General', 'Source', 'Sink', 'Mapping', 'Settings', and 'User properties'. The 'Source' tab is active, showing the following fields:

- Source dataset \*: SapTableResource (with 'Open', 'New', and 'Preview data' buttons)
- Row count: (empty text field)
- RFC table fields: (empty dropdown menu)
- RFC table options: COLUMN0 EQ 'SOME VALUE' (with an 'Edit' checkbox)
- Custom function module: (empty text field)
- Partition option:  None  On Int  On calendar year  On calendar month  On calendar date  On time

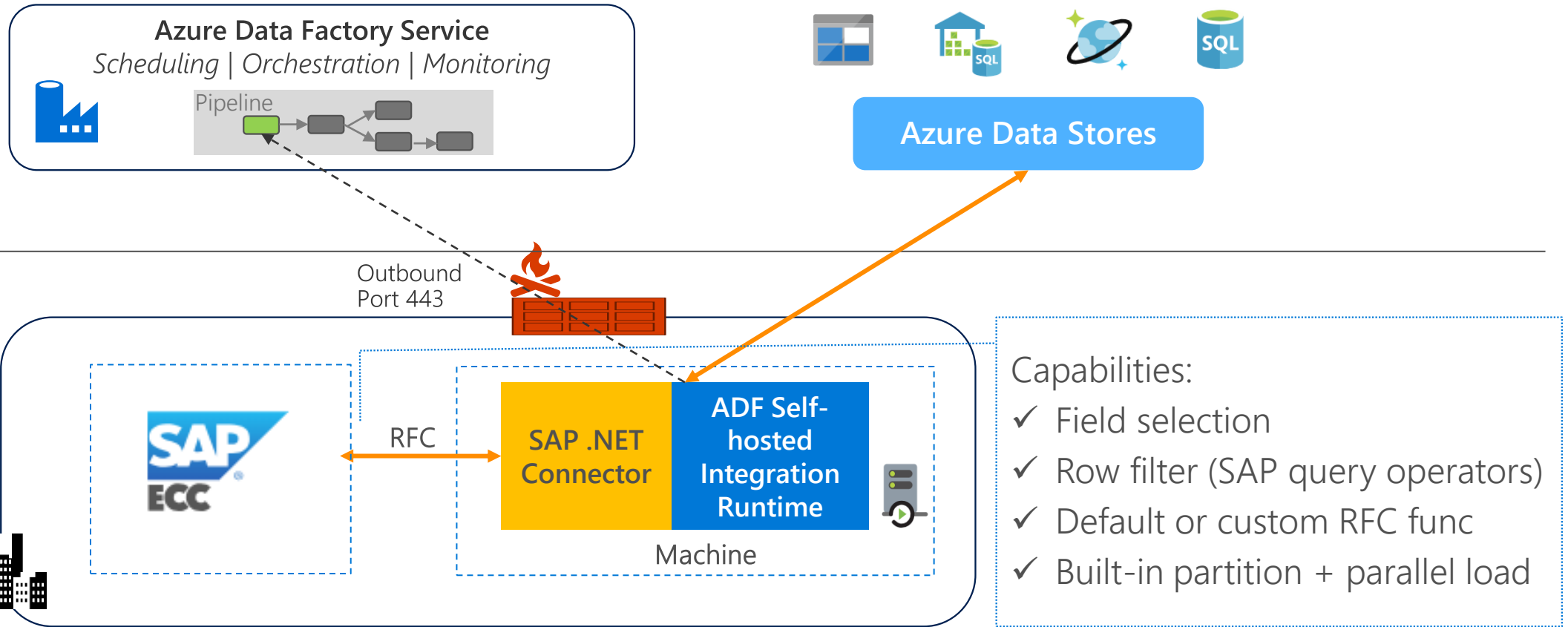
- ✓ Field/column selection
- ✓ Row filter using SAP query operators
- ✓ Use default /SAPDS/RFC\_READ\_TABLE2 or custom RFC module to retrieve data
- ✓ Data partition options for parallel copy to boost perf

# SAP Table Connector – How It Works



←---→ Command and Control

↔ Data



# SAP Table Connector – Built-in Parallel Loading

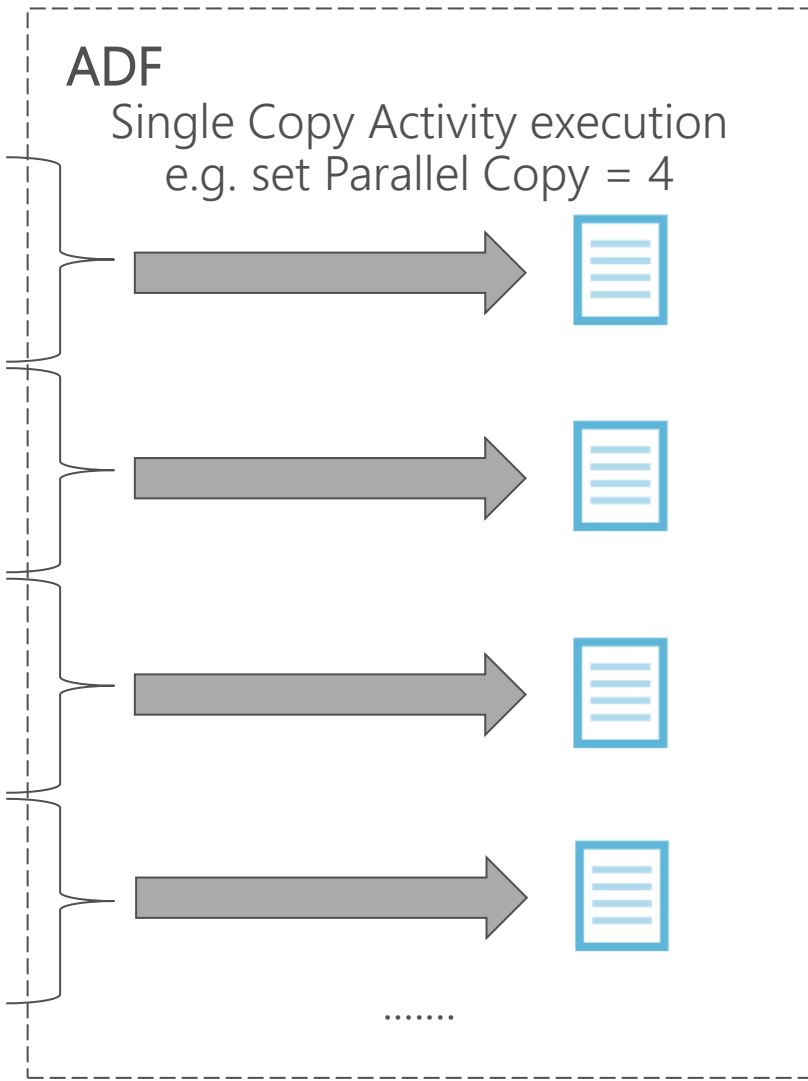


SAP Table

Configurable data partitioning on given column (INT, Calendar Year/Month/Date) + parallel copies

SAP table

C1	C2	...	PartitionCol
...	...	...	201809
...	...	...	201809
...	...	...	...
...	...	...	201810
...	...	...	201810
...	...	...	...
...	...	...	201811
...	...	...	201811
...	...	...	...
...	...	...	201812
...	...	...	201812
...	...	...	...
...	...	...	...



**Tips:**

Enable partitioning when ingesting large dataset, e.g. dozen millions of rows.

To speed up, choose the proper partition column and partition numbers, and adjust parallel copies.

[Learn more](#)

# SAP Table Connector – Incremental Copy



**Pattern I:** “my data has timestamp column e.g. calendar date”

**Solution:** tumbling window trigger + dynamic query with system variables via SAP table option (filter)

**Pattern II:** “my data has an incremental column e.g. id/last copied date”

**Solution:** external control table/file + high watermark.

Get started via solution template:

The screenshot shows the 'Template gallery' interface. On the left, there is a 'Filter' section with a search box containing 'sap table' and a 'Reset all filter' link. Below the filter are 'Categories' (Copy, Data Flow, SSIS, Transform) and 'Create by' (Microsoft). The main area displays a template card for 'Incremental Copy From Sap Table' by Microsoft. The card includes icons for data storage and a magnifying glass, and a description: 'Use this template to copy incremental data from SAP Table to Azure Data Lake Storage Gen2.'

The screenshot shows the details of the 'Incremental Copy From Sap Table' template. The main area displays a data flow diagram with three activities: 'Lookup' (LookupLastCopiedDate), 'Copy Data' (CopyFromSAPTable), and 'Web' (SetLastCopiedDate). Below the diagram is a description: 'Use this template to copy incremental data from SAP Table to Azure Data Lake Storage Gen2.' and a 'View documentation' link. The 'User Inputs' section on the right lists several inputs: 'SAPTableSource\_Incremental' (SAP Table, null), 'SapTable' (dropdown), 'AzureDataLakeStorageGen2Sink' (Azure Data Lake Storage Gen2, ADLS Gen2 sink), 'AdlsGen2' (dropdown), 'AzureBlobDelimitedDataset' (DelimitedText, null), and 'AzureBlobStorage' (dropdown). The 'Tags' section at the bottom includes 'Incremental copy' and 'SAP Table'.



# SAP BW Open Hub Connector

# SAP BW Open Hub Connector

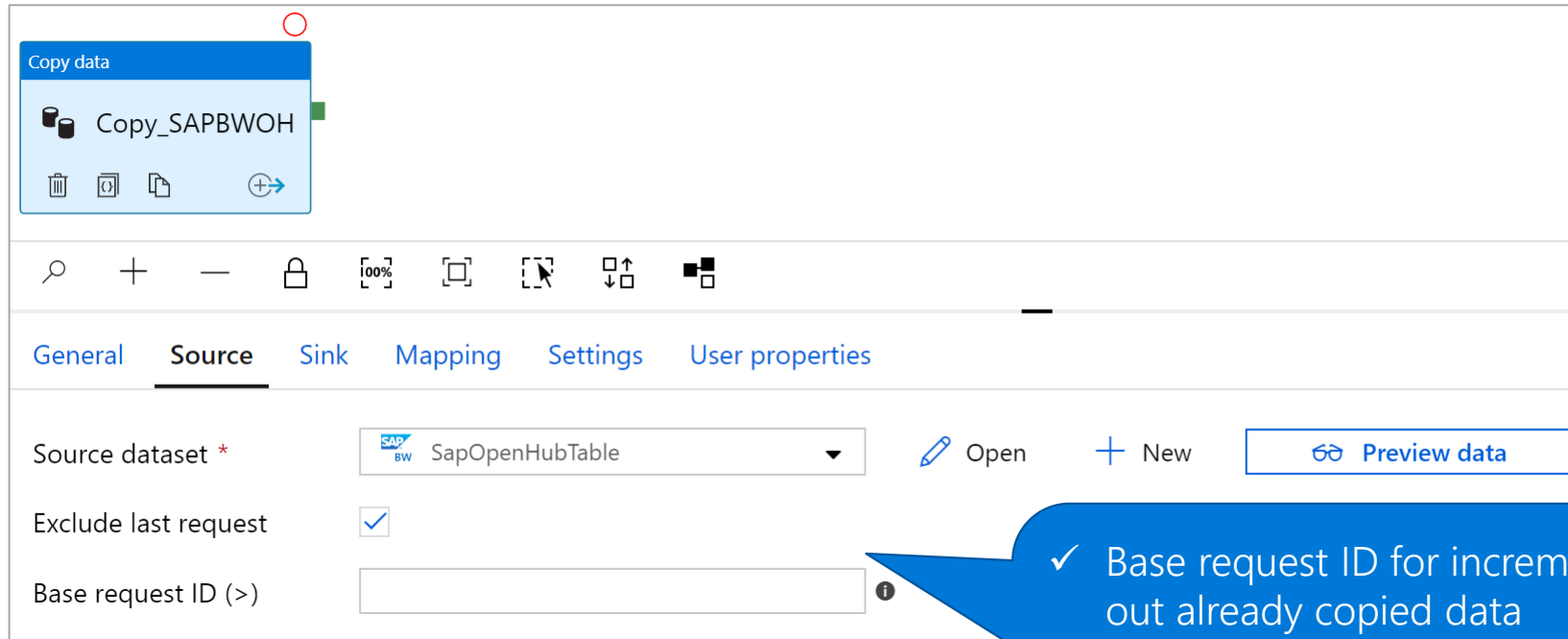


Suitable scenario: ingest data from SAP BW with targeted/well-thought-through workload.

Supported versions	<ul style="list-style-type: none"><li>• SAP BW version 7.01 and above, on-prem or in the cloud*</li></ul>
Supported SAP objects	<ul style="list-style-type: none"><li>• Open Hub Destination (OHD) local table</li><li>• Underneath objects can be DSO, InfoCube, MultiProvider, DataSource etc.</li></ul>
Supported server type	<ul style="list-style-type: none"><li>• Connect to Application Server or Message Server <b>NEW</b></li></ul>
Supported authentications	<ul style="list-style-type: none"><li>• Basic – username &amp; password</li></ul>
Mechanism and prerequisites	<ul style="list-style-type: none"><li>• Built on top of SAP .NET Connector 3.0, pull data via NetWeaver RFC</li><li>• Run on ADF Self-hosted Integration Runtime</li><li>• SAP side config: create SAP OHD in SAP BW to expose data</li></ul>
Performance & Scalability	<ul style="list-style-type: none"><li>• Built-in parallel loading option based on OHD specific schema</li><li>• Performant to handle TB level data, with per run dozens millions to billion of rows &amp; observed several to 20s MB/s (varies per customers' data/env.)</li></ul>

*\*NOTE: currently SAP BW4/HANA is not supported now. Workaround – flow data to other ADF supported data stores e.g. via Open Hub Destination as ADF supported database.*

# SAP BW Open Hub Connector



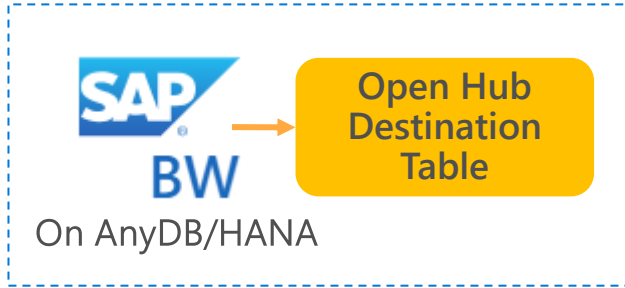
The screenshot shows the SAP BW Open Hub Connector interface. At the top, there is a 'Copy data' dialog box with a title bar and a green checkmark. Below it is a toolbar with icons for search, zoom in, zoom out, lock, 100% zoom, copy, paste, and refresh. The main area has tabs for 'General', 'Source', 'Sink', 'Mapping', 'Settings', and 'User properties'. The 'Source' tab is active, showing a 'Source dataset \*' dropdown menu with 'SapOpenHubTable' selected. To the right of the dropdown are 'Open', 'New', and 'Preview data' buttons. Below the dropdown are two checkboxes: 'Exclude last request' (checked) and 'Base request ID (>)' (empty).

- ✓ Base request ID for incremental copy to filter out already copied data
- ✓ Exclude last request to avoid partial data
- ✓ Built-in parallel copy to boost perf based on OHD's specific schema

# SAP BW Open Hub – How It Works



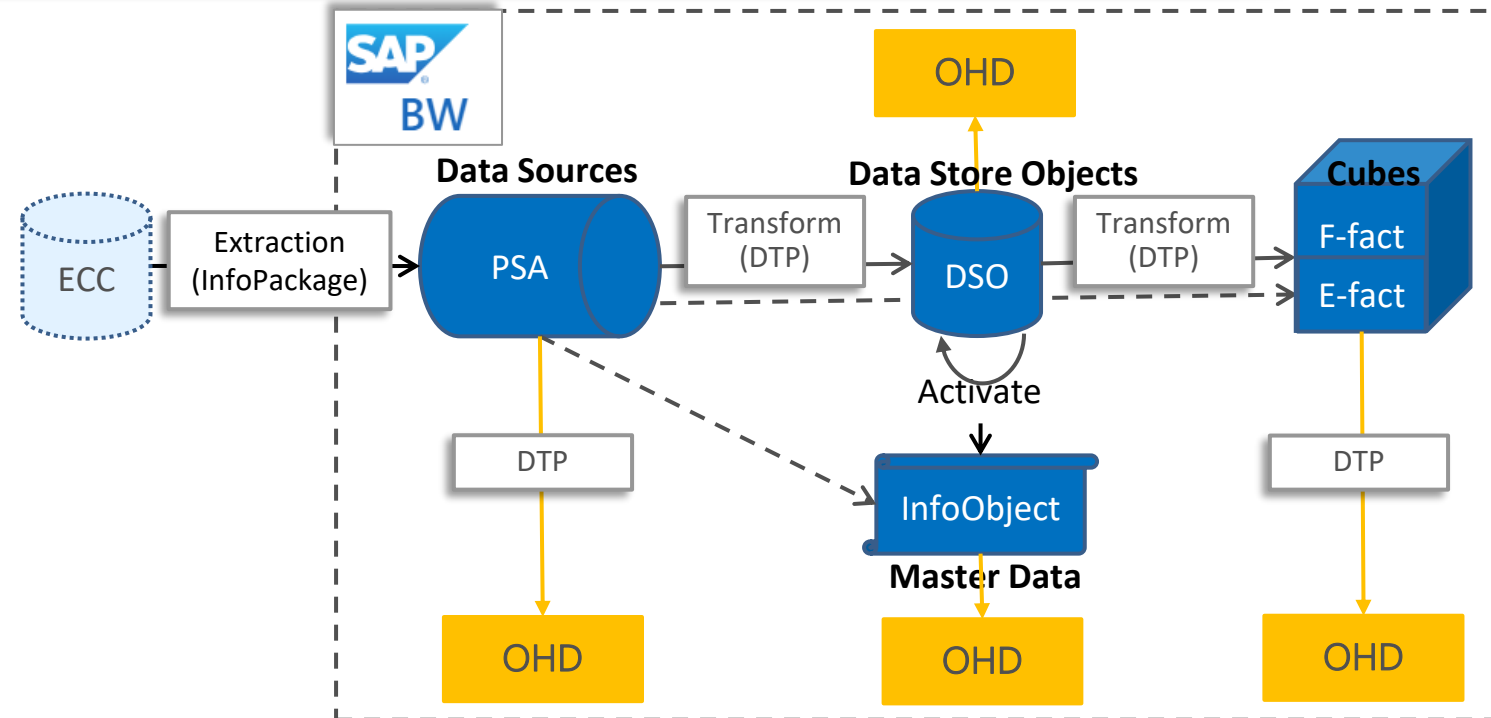
SAP BW Open Hub



## SAP Open Hub Destination (OHD):

- **What is OHD:** defines the target to which the data is relayed.
- **Supported data:** any objects supported by SAP Data Transfer Process (DTP) can be used as open hub data sources.
- **OHD types:** database tables (local or remote) and flat files.

*The connector support OHD local table in BW.*



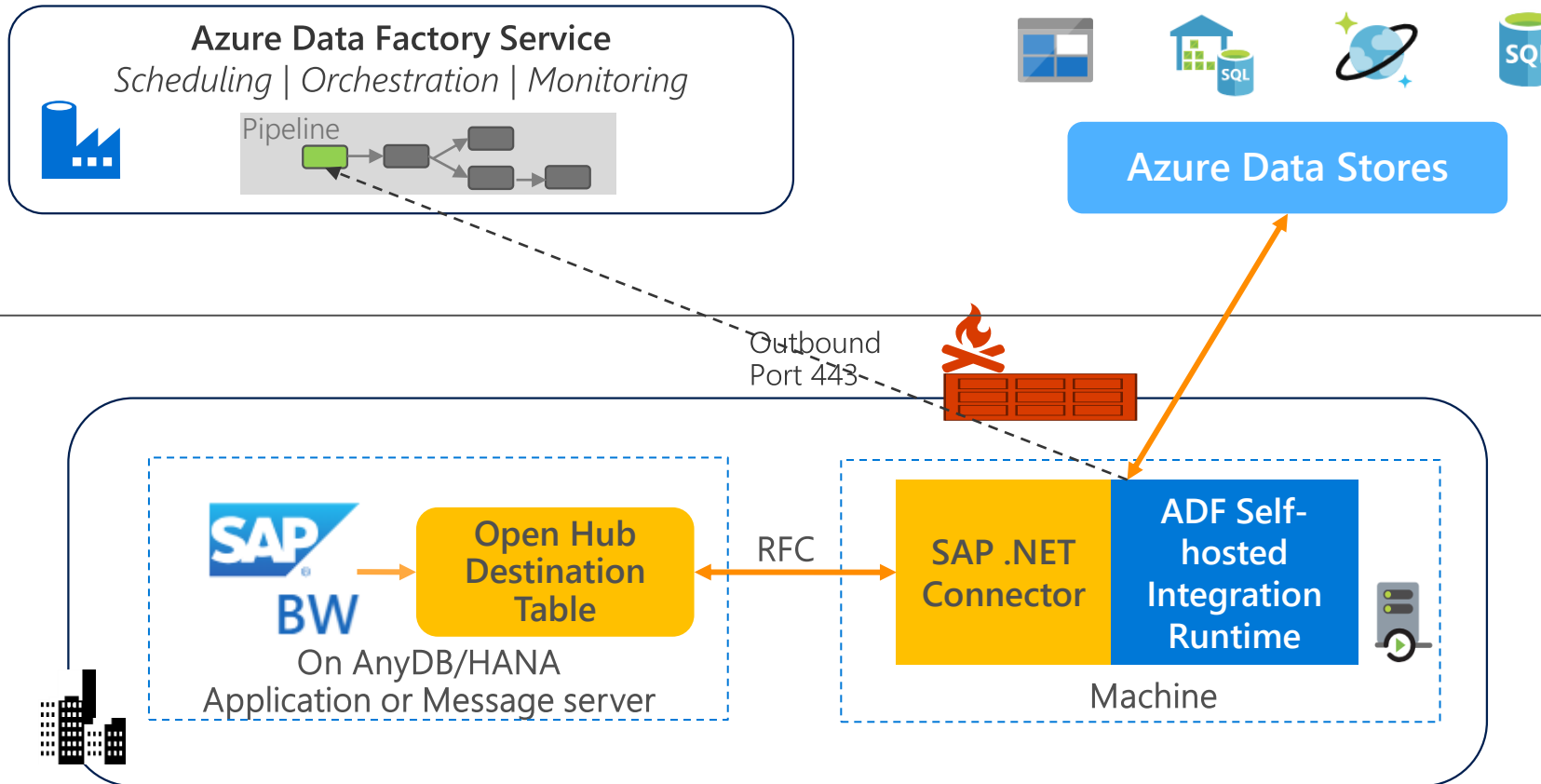
# SAP BW Open Hub Connector – How It Works



SAP BW Open Hub

←---→ Command and Control

↔ Data



# SAP BW Open Hub Connector – Built-in Parallel Loading



SAP BW Open Hub

## SAP BW

OHD table

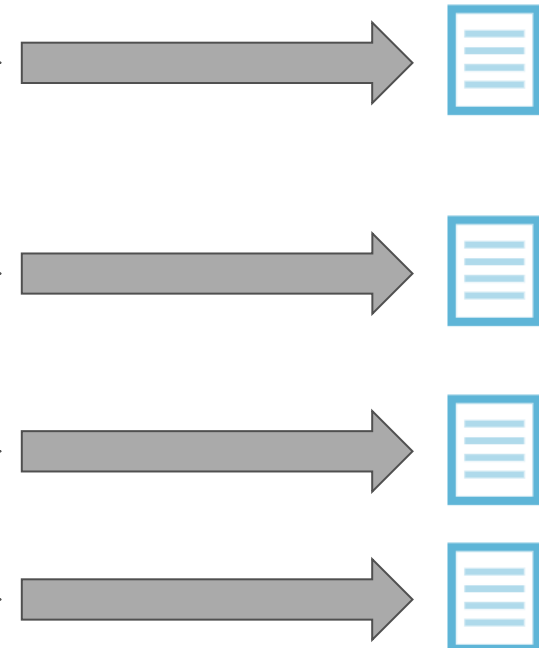
Request ID	Package ID	Record ID	...
1	1	1	...
1	1	2	...
1	1	...	...
1	2	1	...
1	2	2	...
1	2	...	...
1	3	2	...
1	...	...	...
2	...	...	...
2	...	...	...
2	...	...	...
...	...	...	...

SAP BW DTP execution #1:  
unique Request ID

SAP BW DTP execution #2

## ADF

Single Copy Activity execution  
e.g. set Parallel Copy = 4



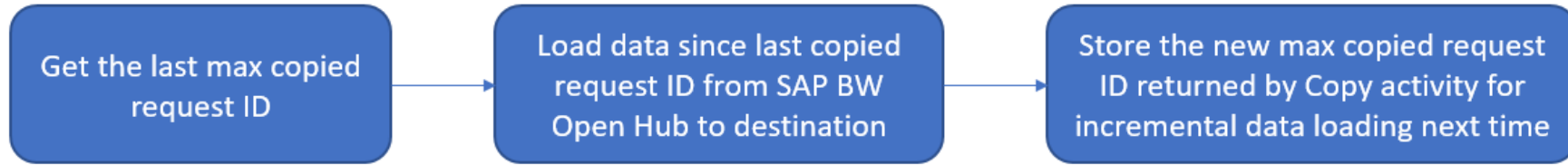
.....

# SAP BW Open Hub Connector – Incremental Copy



SAP BW Open Hub

Solution: external control table/file + high watermark (max copied request ID).



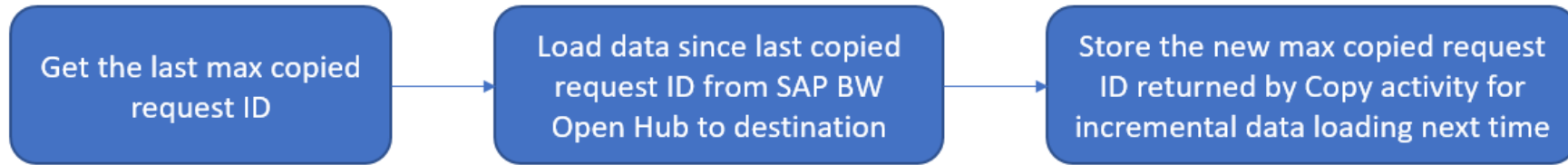
SAP OHD supports "delta" extraction mode to load incremental data into OHD table.

# SAP BW Open Hub Connector – Incremental Copy



SAP BW Open Hub

Solution: external control table/file + high watermark (max copied request ID).



Get started via solution template:

Template gallery X

Filter

SAP BW

Create by

- Microsoft
- My Templates

Tag

- ADLS
- Amazon S3
- Azure Blob Storage

All Copy Data Flow SSIS

**Incremental copy from SAP BW to Azure Data Lake Storage Gen2**

Use this template to copy incremental data from SAP BW via Open Hub to Azure Data Lake Storage Gen2.

by Microsoft

### Incremental copy from SAP BW to Azure Data Lake Storage Gen2

Use this template to copy incremental data from SAP BW via Open Hub to Azure Data Lake Storage Gen2.

[View documentation](#)

Tags

Incremental copy SAP BW Azure Data Lake Storage ADLS

User Inputs

- AzureBlobDataset**  
Azure Blob Storage  
Blob to store the max copied request ID from SAP BW Open Hub table as high watermark  
Azure Blob Storage Connection \*  
Select...
- SAP BW**  
SAPOHDSrc\_Incremental  
SAP BW Open Hub  
SAP BW Open Hub table source  
SAP BW Open Hub Connection \*  
Select...
- AzureDataLakeStorageGen2Sink**  
Azure Data Lake Storage Gen2  
ADLS Gen2 sink  
Azure Data Lake Storage Gen2 Connection \*  
Select...

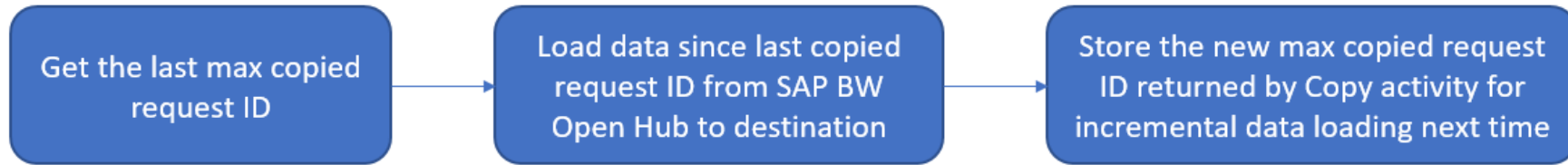


# SAP BW Open Hub Connector – Incremental Copy



SAP BW Open Hub

Solution: external control table/file + high watermark (max copied request ID).



- **baseRequestId:** The ID of request for delta loading. Once it is set, only data with requestId larger than the value of this property will be retrieved.

Copy activity output:

```
Output
{
  "sapOpenHubMaxRequestId": "168375",
  "usedParallelCopies": 5,
  "executionDetails": [
    {
      "source": {
        "type": "SapOpenHub"
      }
    }
  ]
}
```

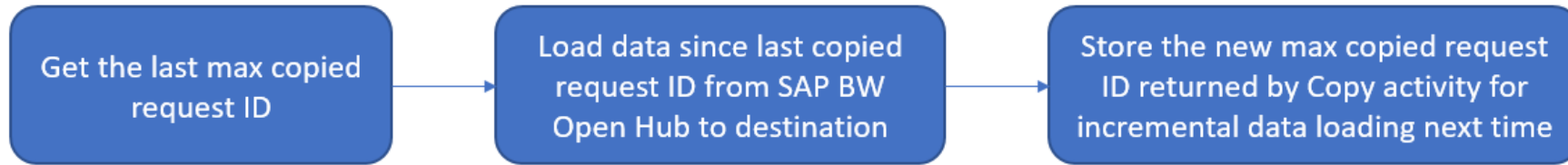
Save and use as baseRequestId in next run

# SAP BW Open Hub Connector – Incremental Copy



SAP BW Open Hub

Solution: external control table/file + high watermark (max copied request ID).



- `excludeLastRequestId`: Whether to exclude the records of the last request. Default value is true.

Request ID	Package ID	Record ID	...
...	...	...	...
100	...	...	...
...	...	...	...
200	...	...	...
...	...	...	...
300	...	...	...
300	...	...	...

Exclude Last request ID:

- Applicable if DTP and Copy may run at the same time

Include Last request ID:

- Applicable if Copy is always invoked after DTP is done

# SAP BW Open Hub Connector – Best Practice



- SAP BW OHD configurations and how it chains with ADF copy ([guidance](#)).
  - ❑ Extraction mode – full vs delta
  - ❑ DTP and ADF scheduling
  - ❑ Housekeeping on SAP server

# SAP ECC Connector

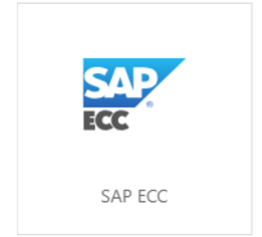
# SAP ECC Connector



Suitable scenario: ingest data from SAP Applications other than SAP Table.

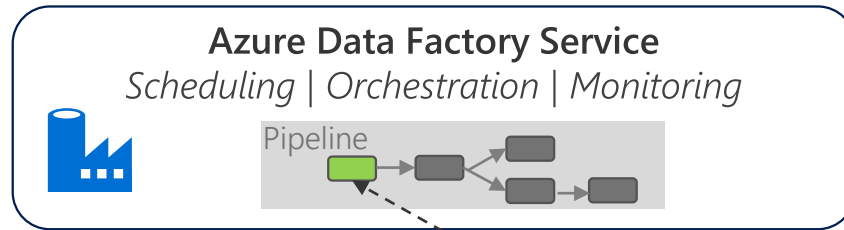
Supported versions	<ul style="list-style-type: none"><li>• SAP ECC version 7.0 and above</li><li>• Any entities exposed by SAP ECC OData services</li></ul>
Supported SAP objects	<ul style="list-style-type: none"><li>• Entities exposed by SAP OData services</li><li>• BAPI, ODP (DataExtractors/DataSource), etc.</li></ul>
Supported authentications	<ul style="list-style-type: none"><li>• Basic – user name &amp; password</li></ul>
Mechanism and prerequisites	<ul style="list-style-type: none"><li>• Though OData + SAP Gateway</li><li>• Run on Self-hosted Integration Runtime if SAP in private network</li><li>• SAP side config: set up SAP Gateway, activate OData service, and expose entities</li></ul>

# SAP ECC Connector – How Connector Works



←---→ Command and Control

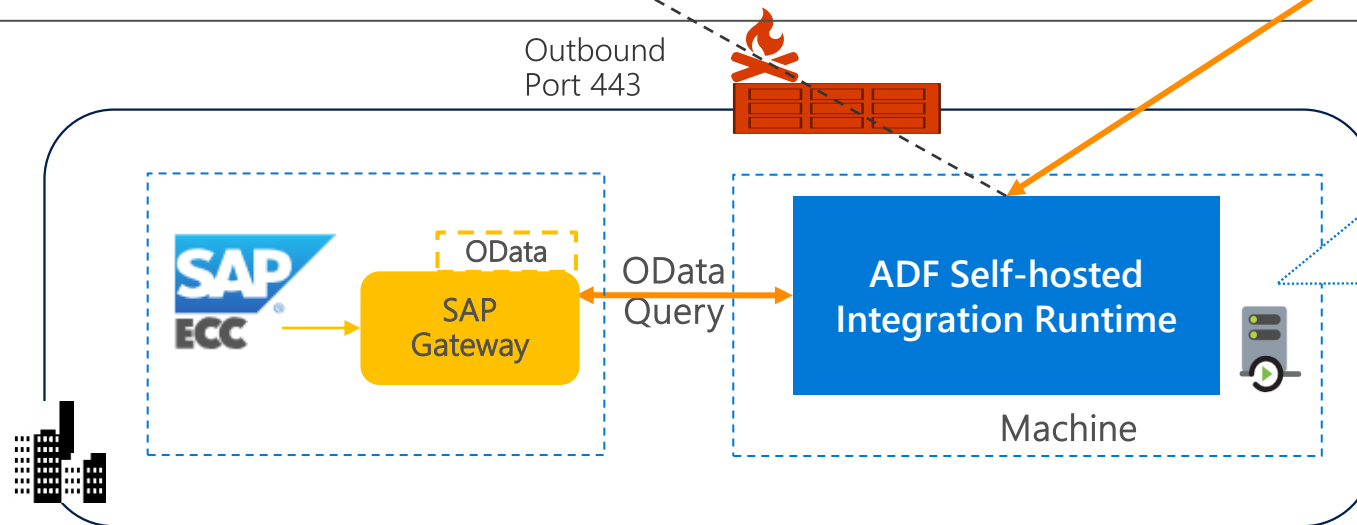
↔ Data



**Azure Data Stores**

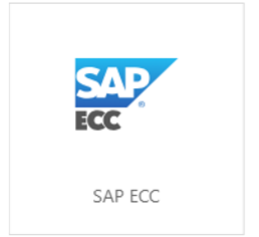
Azure

On-prem or  
Azure VNET



- If your ECC is publicly accessible, you can use managed Azure Integration Runtime instead of Self-hosted Integration Runtime.
- Tip: per run limit to under 1 million rows

# SAP ECC Connector – Incremental Copy



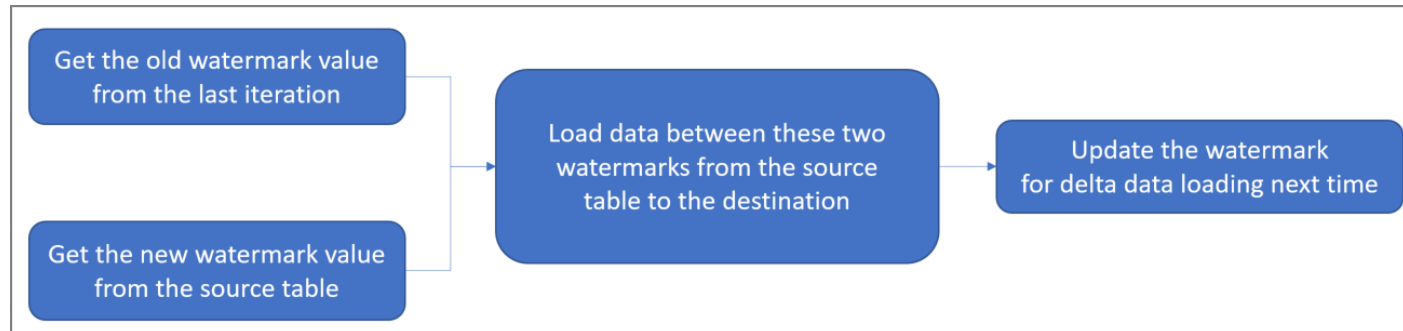
*(in general, same as HANA in earlier slides)*

**Pattern I:** “my data has timestamp column e.g. last modified time”

**Solution:** tumbling window trigger + dynamic query with system variables via OData query

**Pattern II:** “my data has an incremental column e.g. ID”

**Solution:** external control table/file + high watermark.



**Pattern III:** “my data is small in size as dimension data”

**Solution:** full copy and overwrite

SAP BW via MDX Connector



# SAP BW via MDX Connector



Suitable scenario: ingest data from SAP BW, with exploratory use case.

## Supported versions

- SAP BW version 7.x, on-prem or in the cloud e.g. on Azure

## Supported server type

- Connect to Application Server

## Supported SAP objects

- InfoCubes and QueryCubes (including BEx queries)

## Supported authentications

- Basic – username & password

## Mechanism and prerequisites

- Built on top of SAP NetWeaver library, pull data via RFC
- Run on Self-hosted Integration Runtime

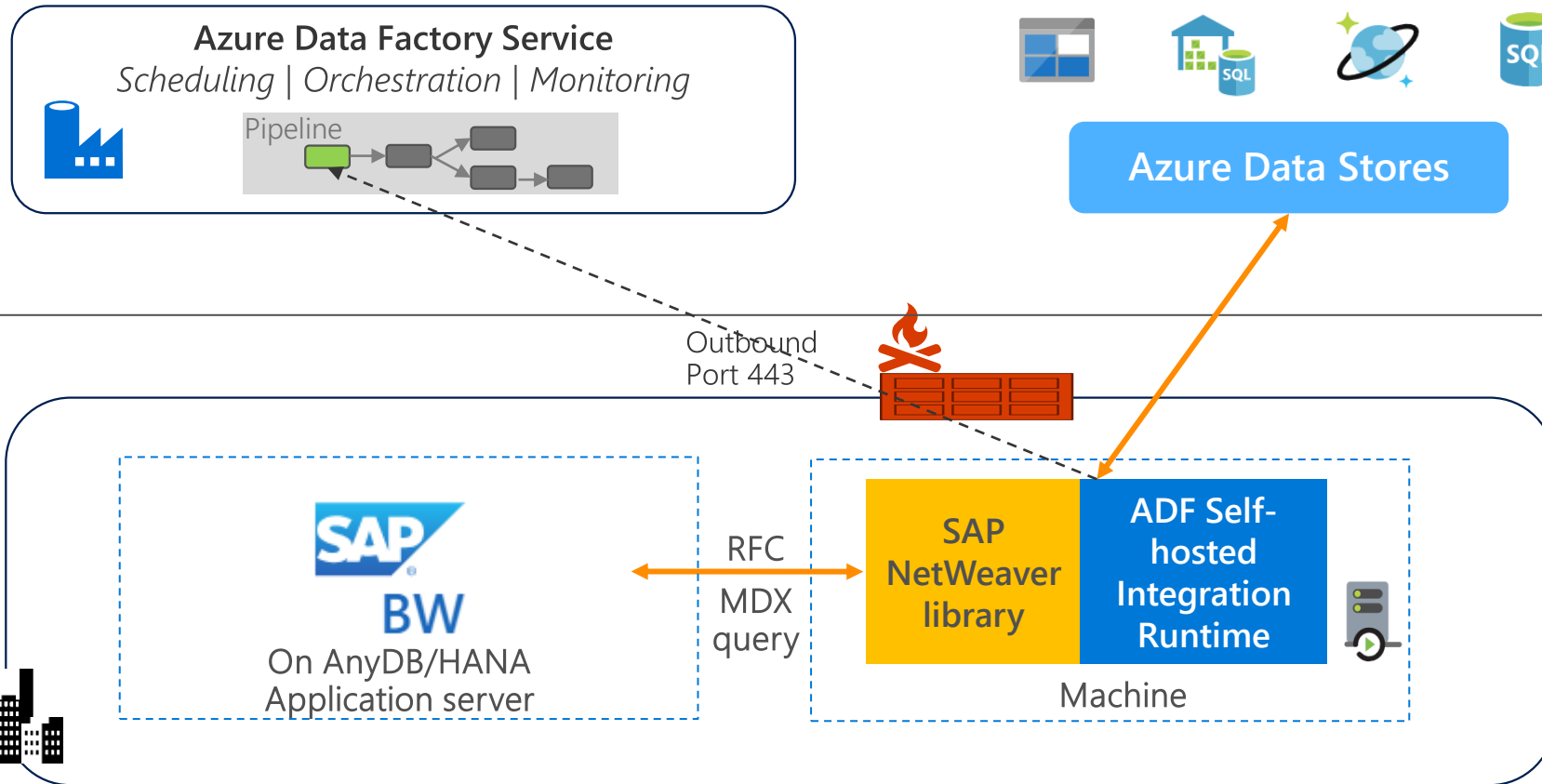
*NOTE: SAP BW4/HANA is not supported now.*

# SAP BW via MDX Connector – How It Works



←---→ Command and Control

↔ Data

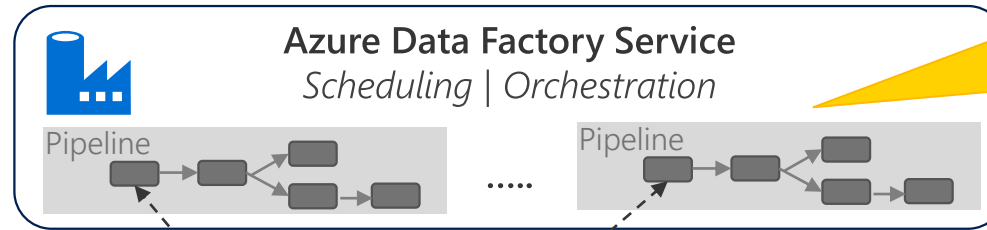


More about Azure Data Factory Copy Activity

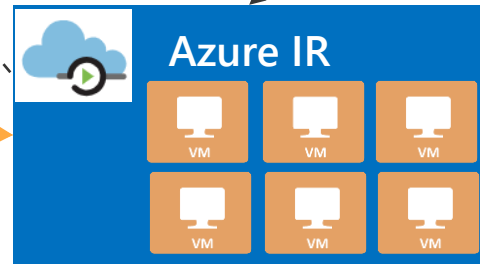
# Understand How ADF Copy Scales

←---→ Command and Control

↔ Data

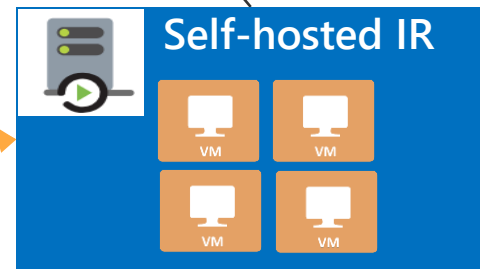
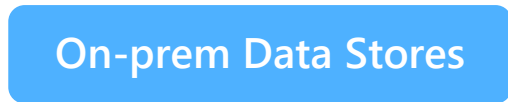


Flexible control flow & scheduling to scale out.  
*(multiple copy activities, concurrency, partitions)*



**Cloud**

**On-prem/  
Azure VNet**

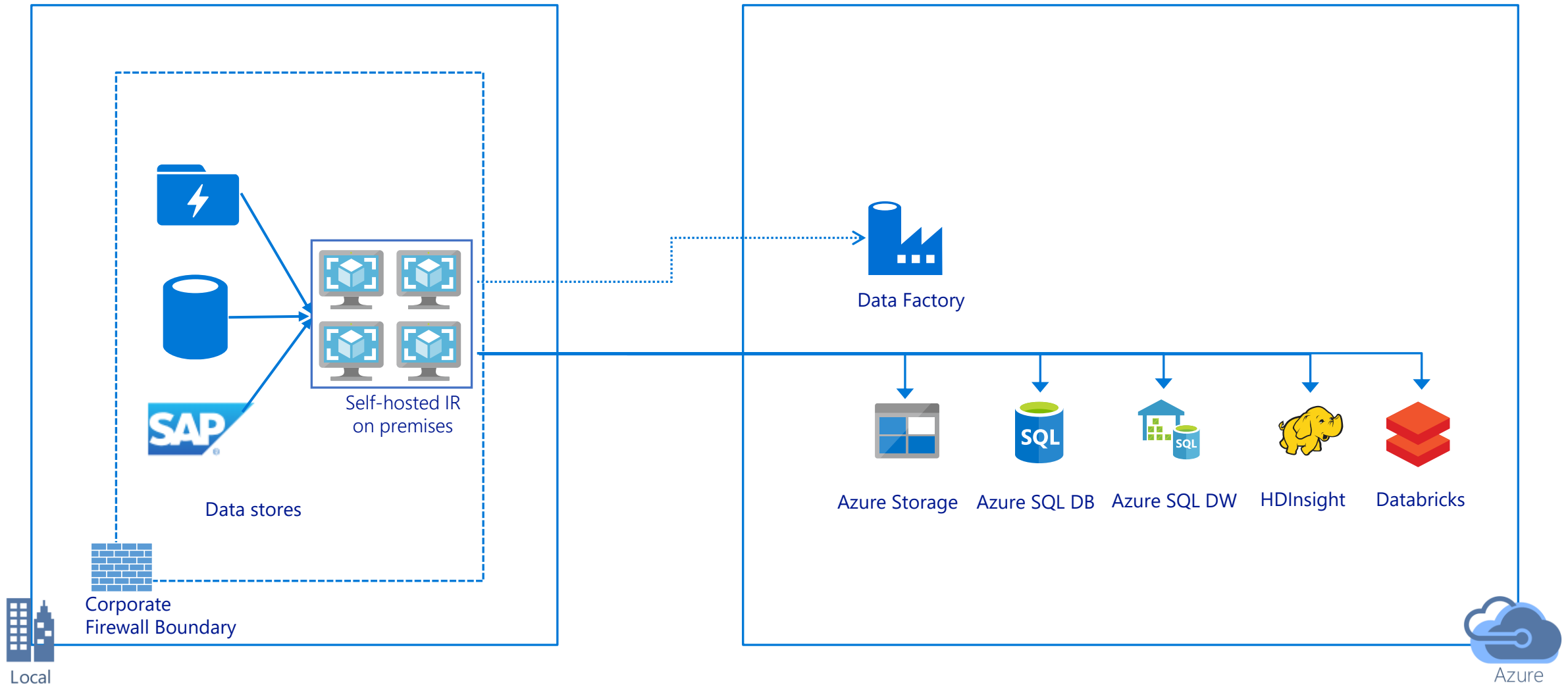


Elastic managed infra to handle data at scale.  
*(configurable DIUs per run)*

Customer managed infra with scaling options.  
*(powerfulness, concurrency)*

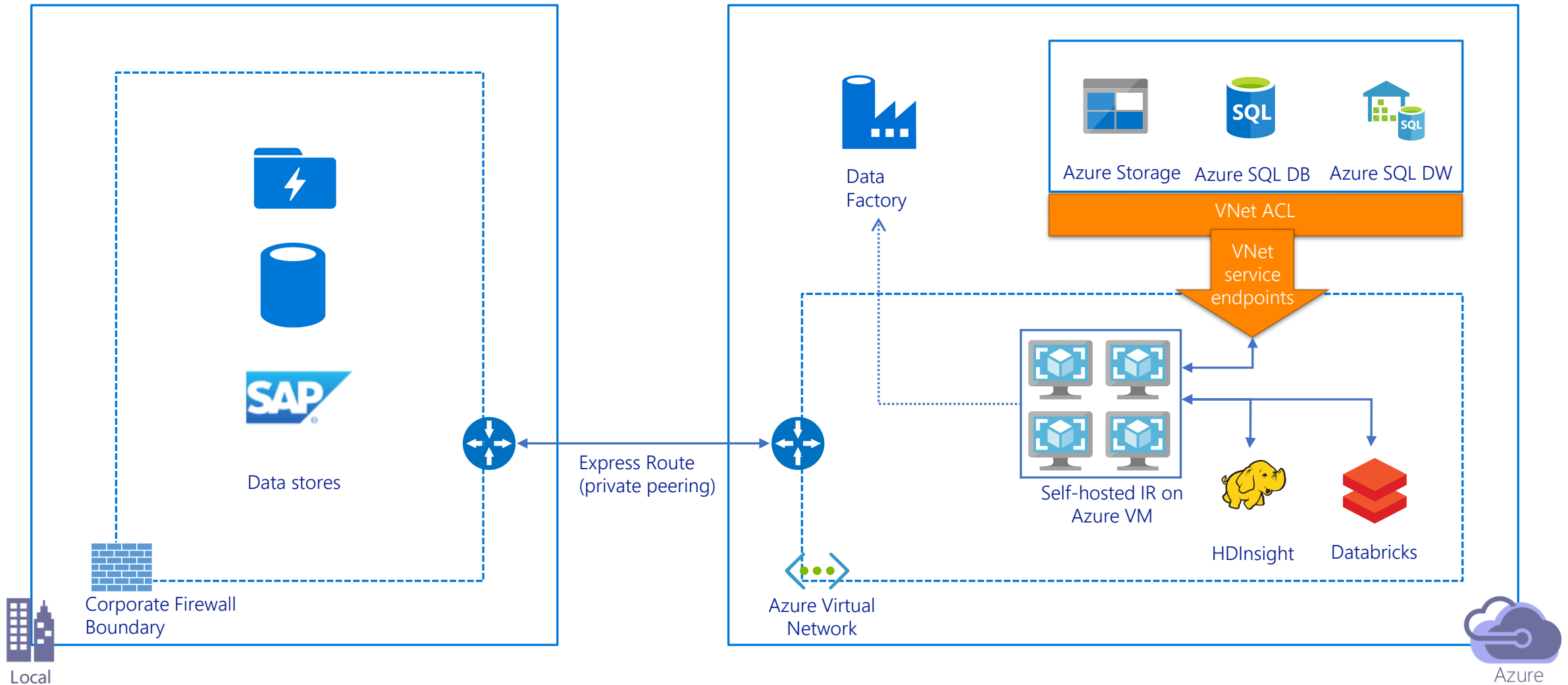
# On-prem connected to Azure through public internet

## Self-hosted IR deployed on premises



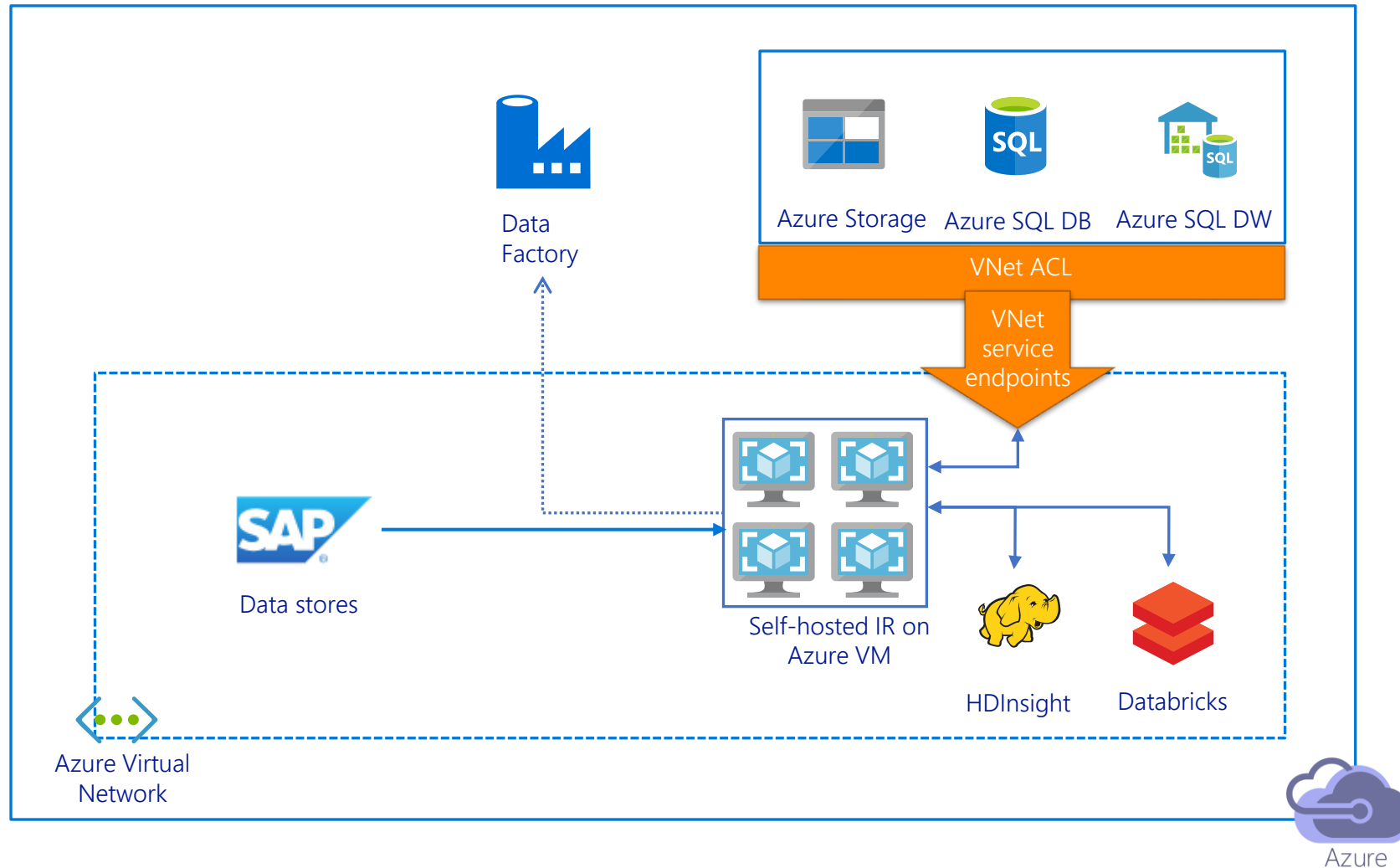
# On-prem connected to Azure VNet through ExpressRoute

## Self-hosted IR deployed on Azure VM



# SAP on Azure

## Self-hosted IR deployed on Azure VM



# Get Started

The screenshot shows the 'Copy Data' tool interface. On the left, a navigation pane lists steps: 1 Properties (One time copy), 2 Source, 3 Destination, 4 Settings, 5 Summary, and 6 Deployment. The 'Source' step is active. The main area is titled 'Source data store' and contains a search bar with 'All' selected. Below the search bar, three source data stores are listed: ADLSGen2, AzureBlobStorage, and SapOpenHub1. At the bottom, there are 'Previous' and 'Next' buttons.

The 'New Linked Service' dialog box is open, showing search results for 'sap'. The search bar contains 'sap'. Below the search bar, there are tabs for 'All', 'Azure', 'Database', 'File', 'Generic protocol', 'NoSQL', and 'Services and apps'. The 'All' tab is selected. The results are displayed in a grid of six cards:

- SAP BW (SAP BW Open Hub)
- SAP BW (SAP BW via MDX)
- C4C (SAP Cloud For Customer)
- SAP ECC (SAP ECC)
- SAP HANA (SAP HANA)
- SAP TABLE (SAP Table)

At the bottom of the dialog, there is a 'Cancel' button.

Copy Data Tool

Solution Template

**Incremental copy from SAP BW to Azure Data Lake Storage Gen2**  
Use this template to copy incremental data from SAP BW via Open Hub to Azure Data Lake Storage Gen2.

by Microsoft

**Incremental Copy From Sap Table**  
Use this template to copy incremental data from SAP Table to Azure Data Lake Storage Gen2.

by Microsoft



# Resources

ADF Copy Activity Overview	<a href="https://docs.microsoft.com/azure/data-factory/copy-activity-overview">https://docs.microsoft.com/azure/data-factory/copy-activity-overview</a>
SAP HANA Connector	<a href="https://docs.microsoft.com/azure/data-factory/connector-sap-hana">https://docs.microsoft.com/azure/data-factory/connector-sap-hana</a>
SAP Table Connector	<a href="https://docs.microsoft.com/azure/data-factory/connector-sap-table">https://docs.microsoft.com/azure/data-factory/connector-sap-table</a>
SAP BW Open Hub Connector	<a href="https://docs.microsoft.com/azure/data-factory/connector-sap-business-warehouse-open-hub">https://docs.microsoft.com/azure/data-factory/connector-sap-business-warehouse-open-hub</a>
SAP BW MDX Connector	<a href="https://docs.microsoft.com/azure/data-factory/connector-sap-business-warehouse">https://docs.microsoft.com/azure/data-factory/connector-sap-business-warehouse</a>
SAP ECC Connector	<a href="https://docs.microsoft.com/azure/data-factory/connector-sap-ecc">https://docs.microsoft.com/azure/data-factory/connector-sap-ecc</a>
SAP C4C Connector	<a href="https://docs.microsoft.com/azure/data-factory/connector-sap-cloud-for-customer">https://docs.microsoft.com/azure/data-factory/connector-sap-cloud-for-customer</a>
Customer case study	<ul style="list-style-type: none"><li>• <a href="#">Analytics and Integration for SAP Global Instance running on-premises with ADF</a></li><li>• Reckitt Benckiser (RB): <a href="https://customers.microsoft.com/story/reckitt-benckiser-consumer-goods-power-bi">https://customers.microsoft.com/story/reckitt-benckiser-consumer-goods-power-bi</a></li><li>• Newell: <a href="https://customers.microsoft.com/story/newell-brands-consumer-goods-azure">https://customers.microsoft.com/story/newell-brands-consumer-goods-azure</a></li></ul>