Microsoft

Azure Data Factory

Hybrid data integration, at global scale

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AZURE DATA FACTORY

A fully-managed data integration service in the cloud

PRODUCTIVE

- ✓ Drag & Drop UI
- ✓ Codeless Data Movement

HYBRID

- ✓ Orchestrate where your data lives
- ✓ Lift SSIS packages to Azure

SCALABLE

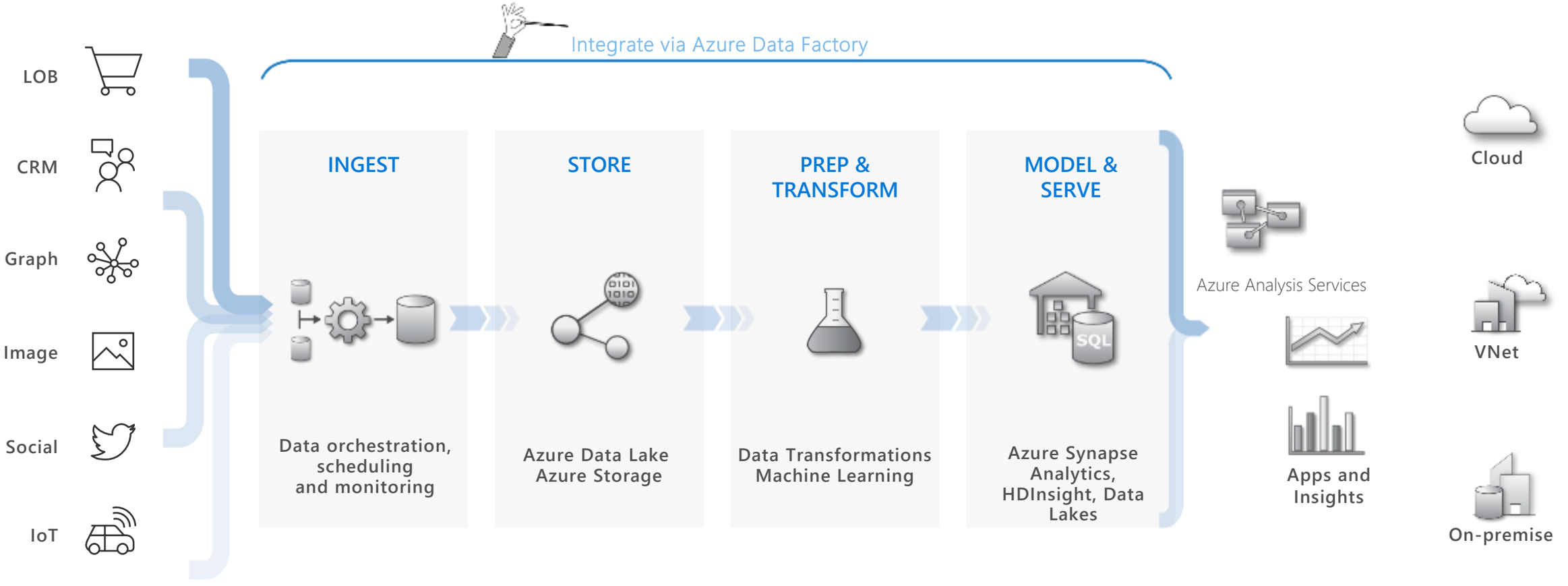
- ✓ Serverless scalability with no infrastructure to manage

TRUSTED

- ✓ Certified compliant Data Movement

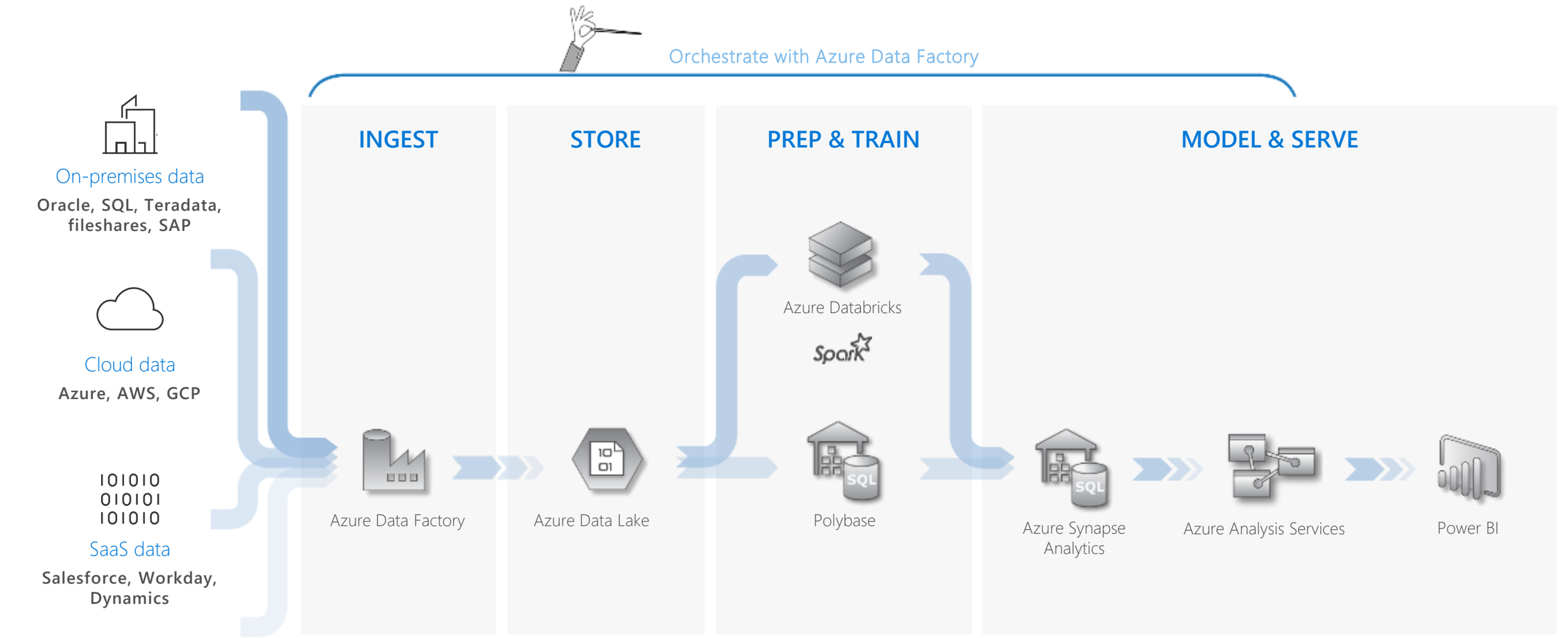
AZURE DATA FACTORY

Modernize your enterprise data warehouse at scale



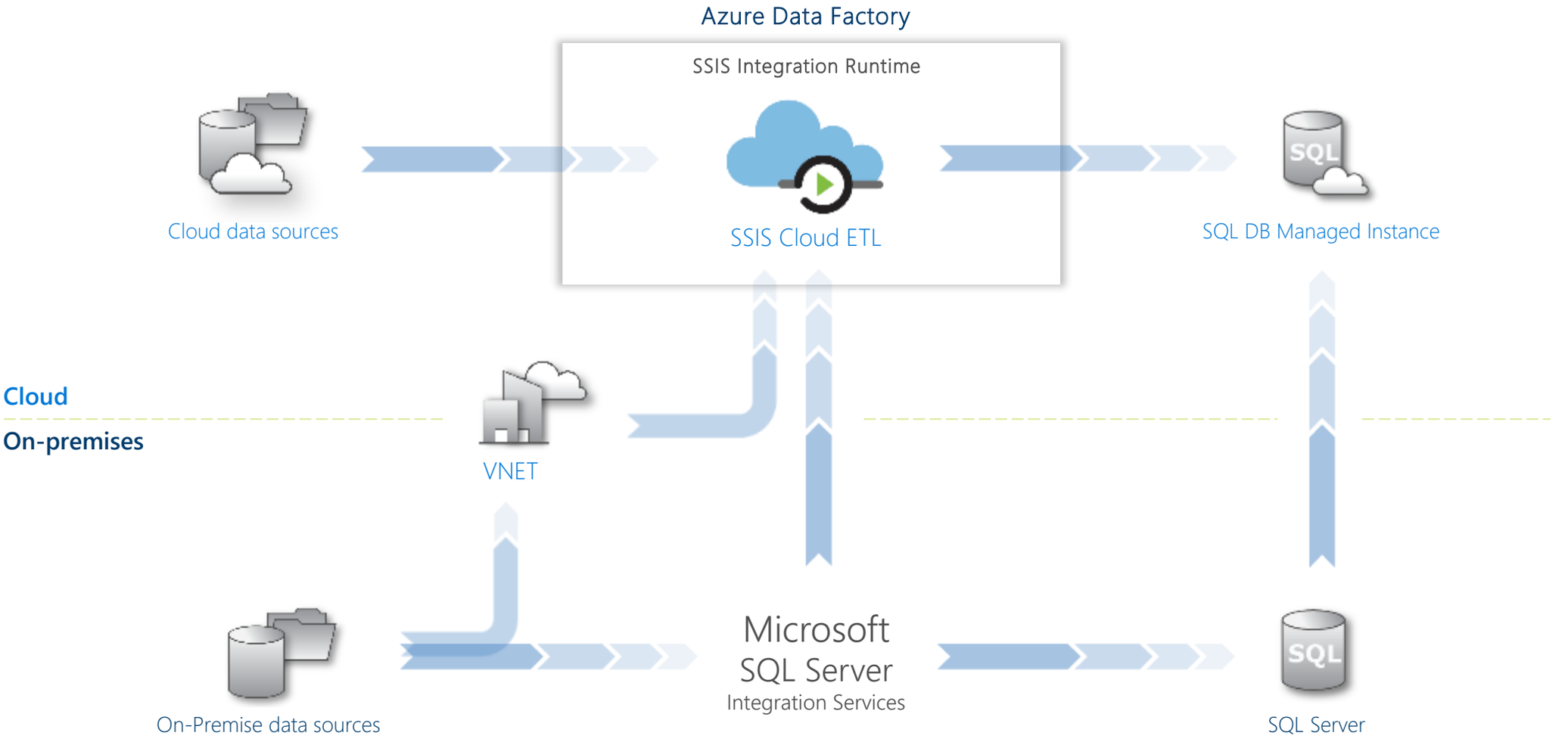
AZURE DATA FACTORY

Modernize your enterprise data warehouse at scale

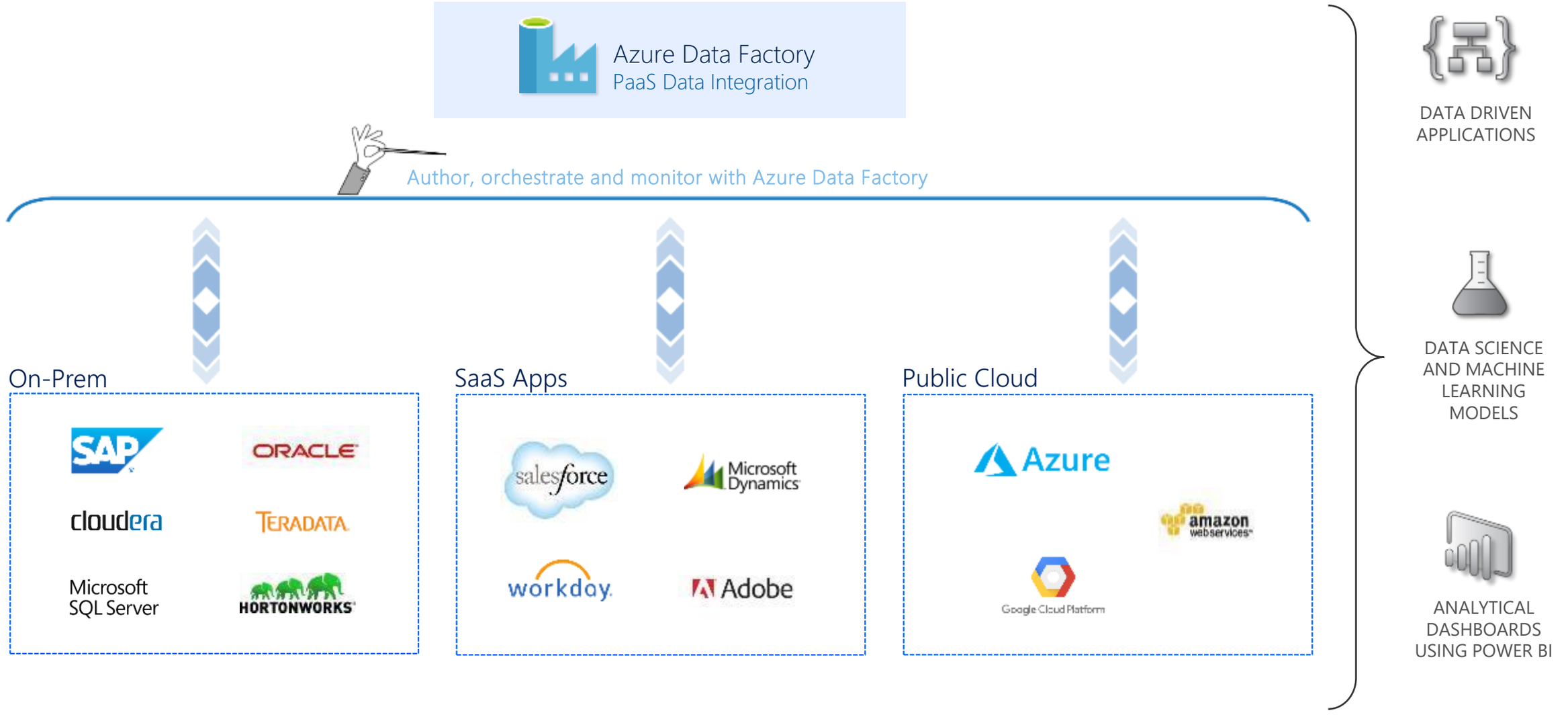


Microsoft Azure also supports other **Big Data** services like **Azure HDInsight**, **Azure SQL Database** and **Azure Data Lake** to allow customers to tailor the above architecture to meet their unique needs.

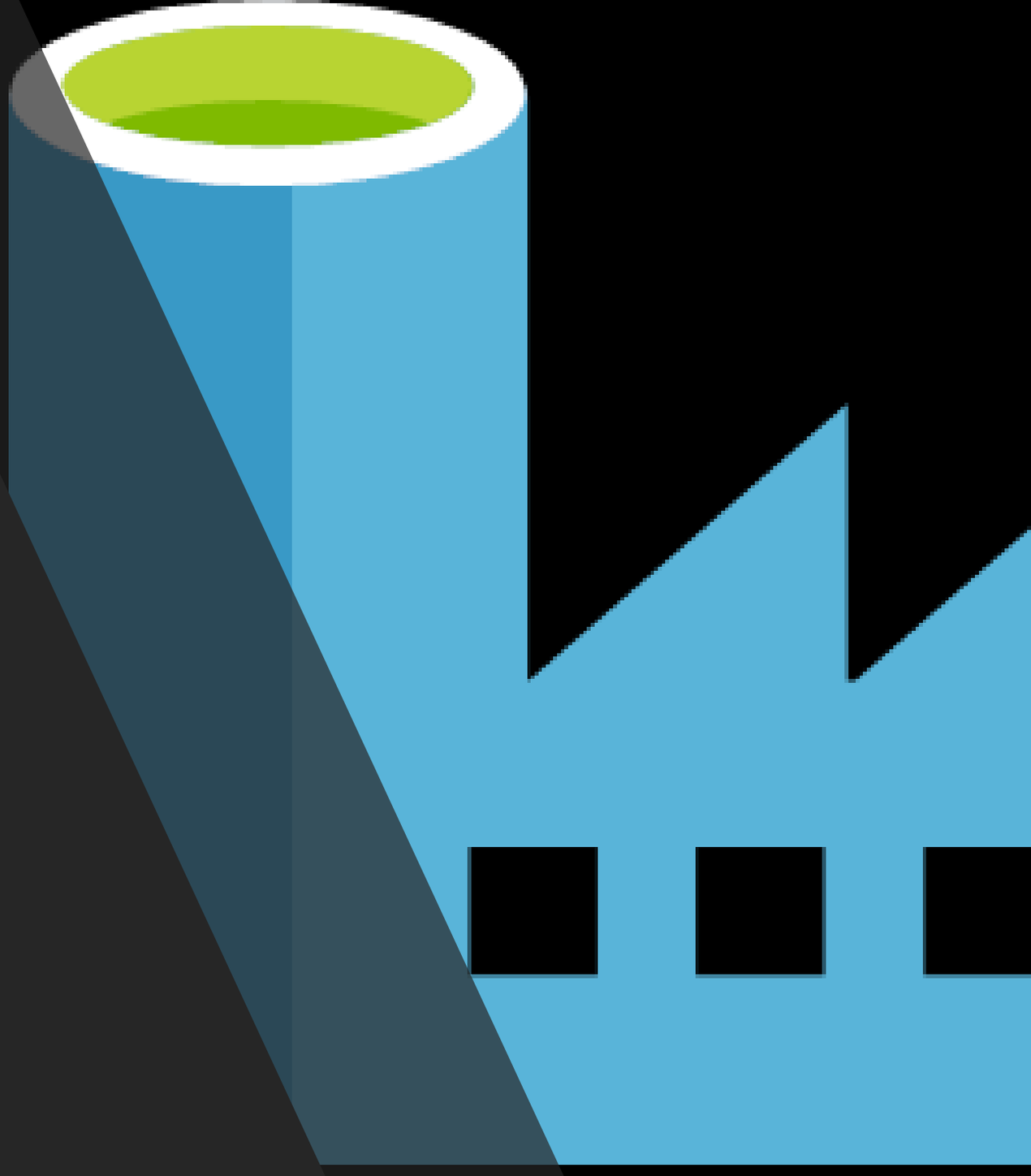
Lift your SQL Server Integration Services (SSIS) packages to Azure



Hybrid and Multi-Cloud Data Integration



Azure Data Factory

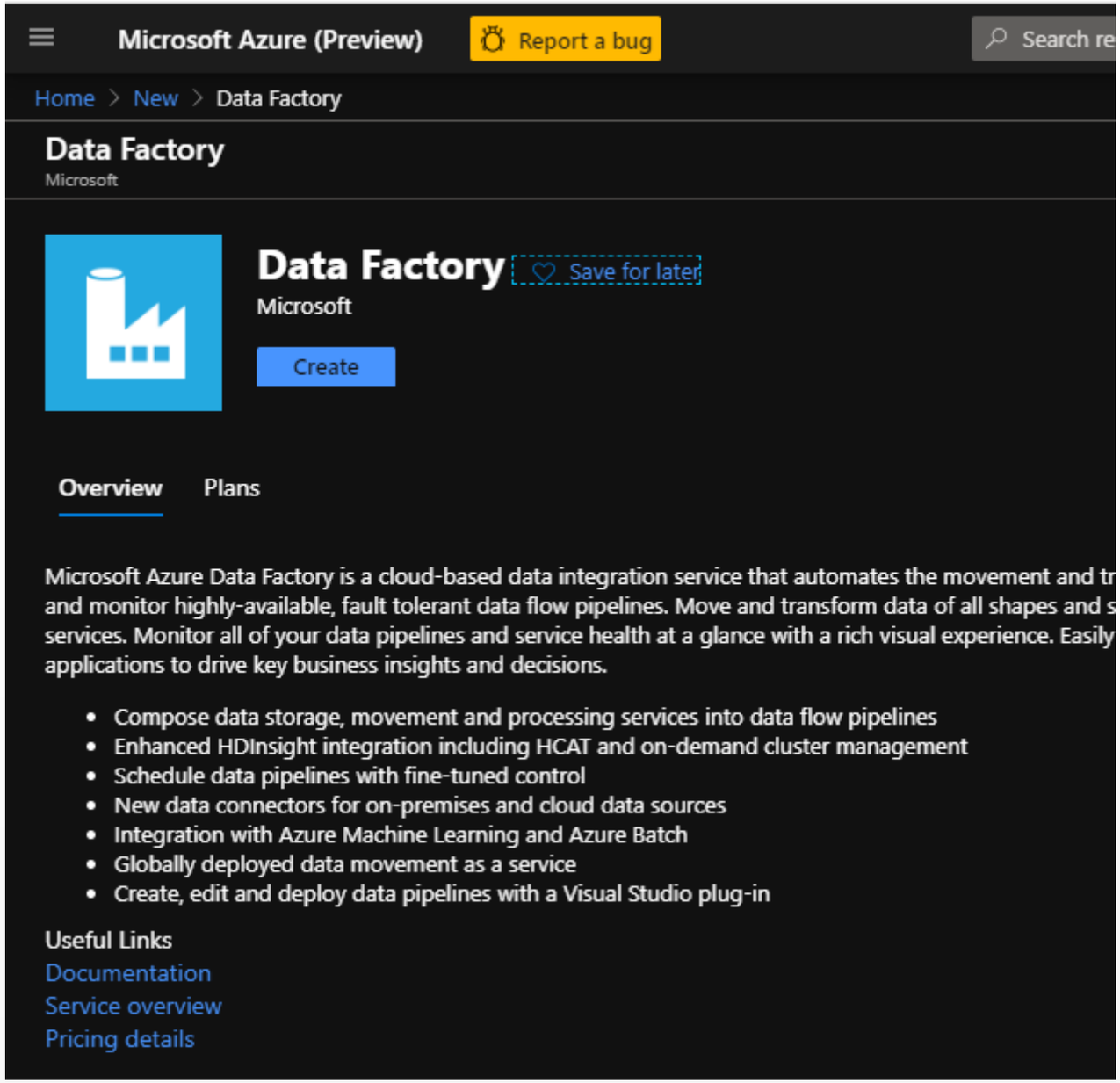


What is Azure Data Factory?

Azure Data Factory is a cloud service that ***orchestrates***, ***manages***, and ***monitors*** the integration and transformation of structured and unstructured data from on-premises and cloud sources at scale.

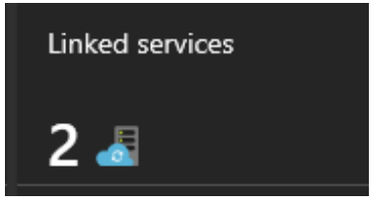
Where

Portal.azure.com

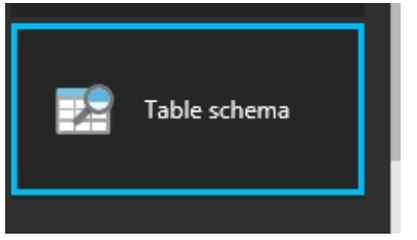


Three Main Elements

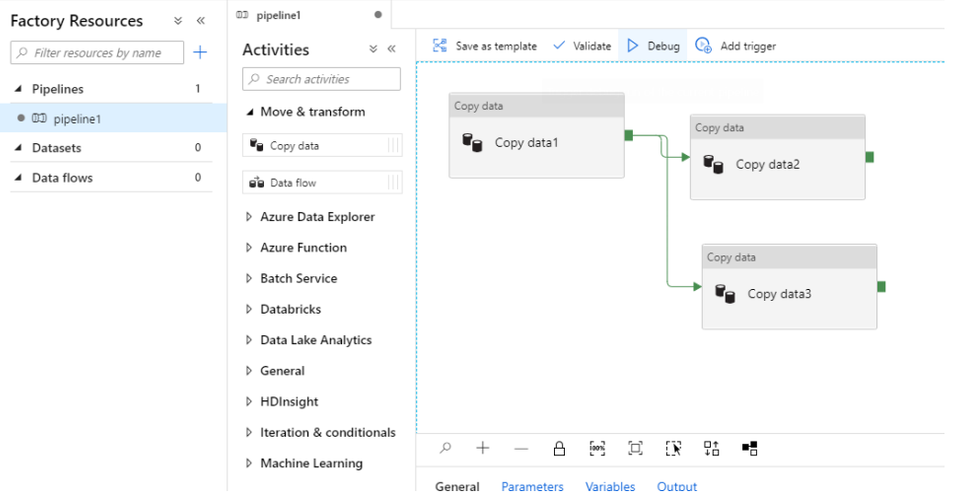
- Linked Services – Think Connection Managers



- Datasets—Schemas Think mapping of Data Flows

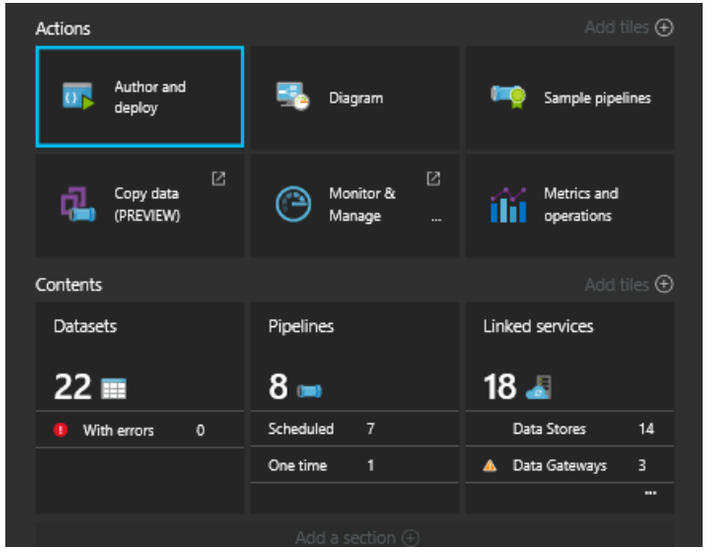


- Pipeline –Think Data Flows
  - Activities –Types of Data Flows

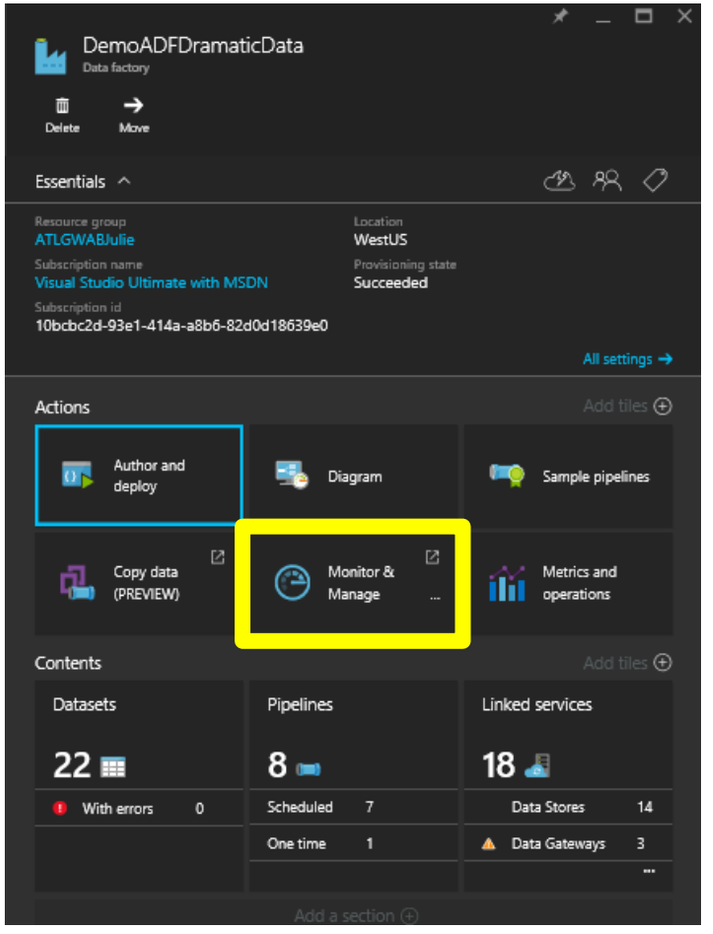


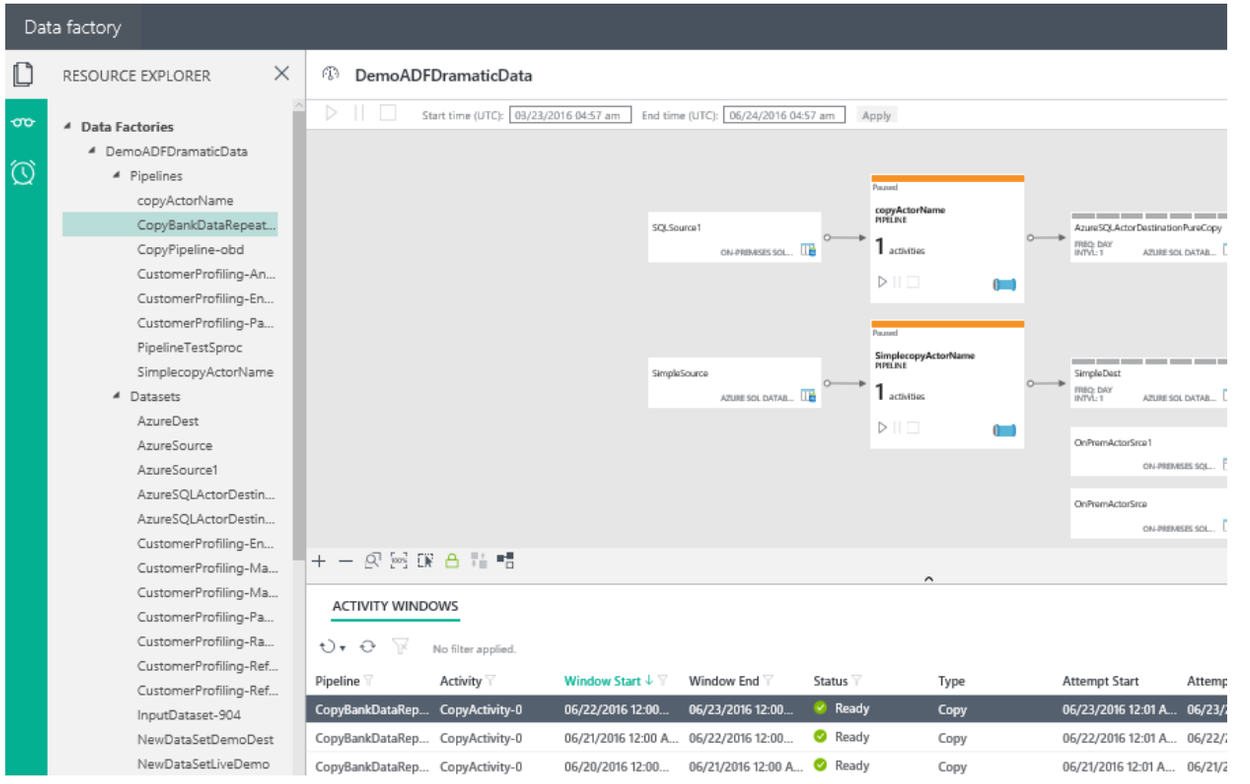
Main Dev Environments

- Portal
- Monitor and Manage
- Visual Studio



Monitor and Manage





Diagram

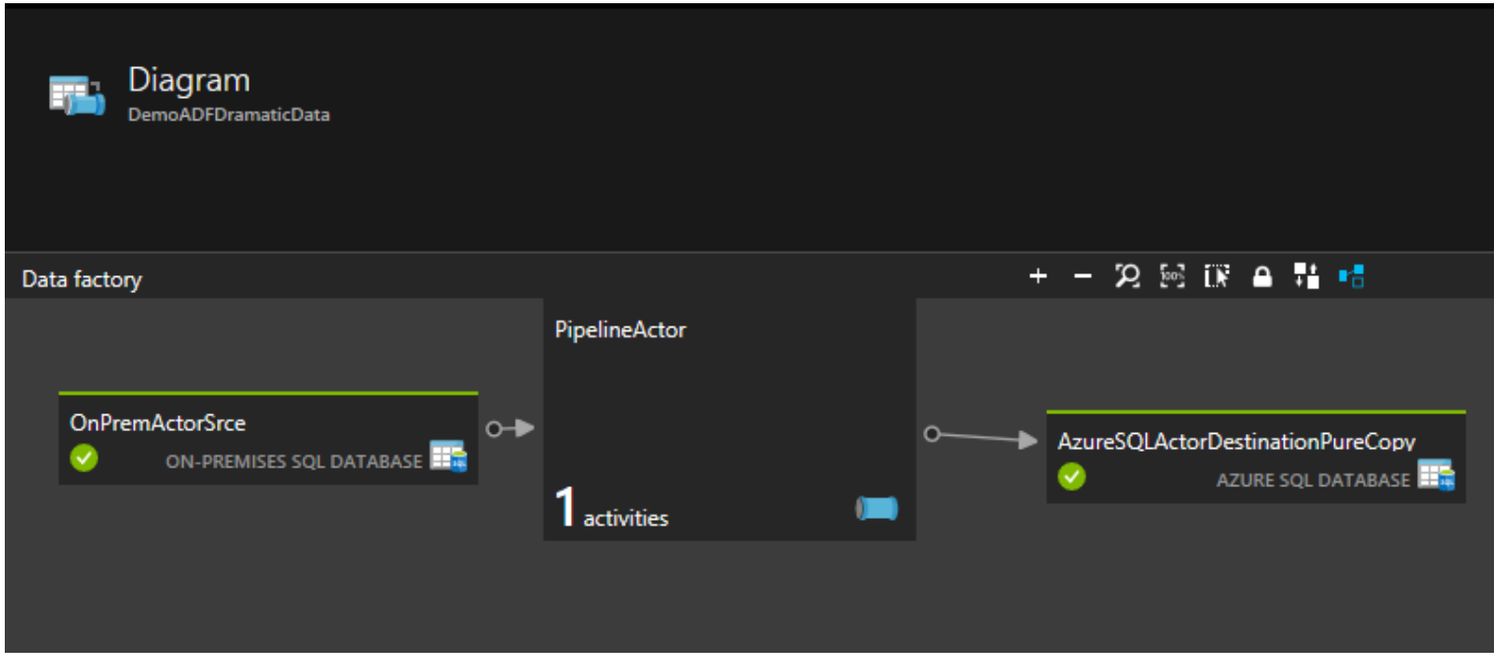
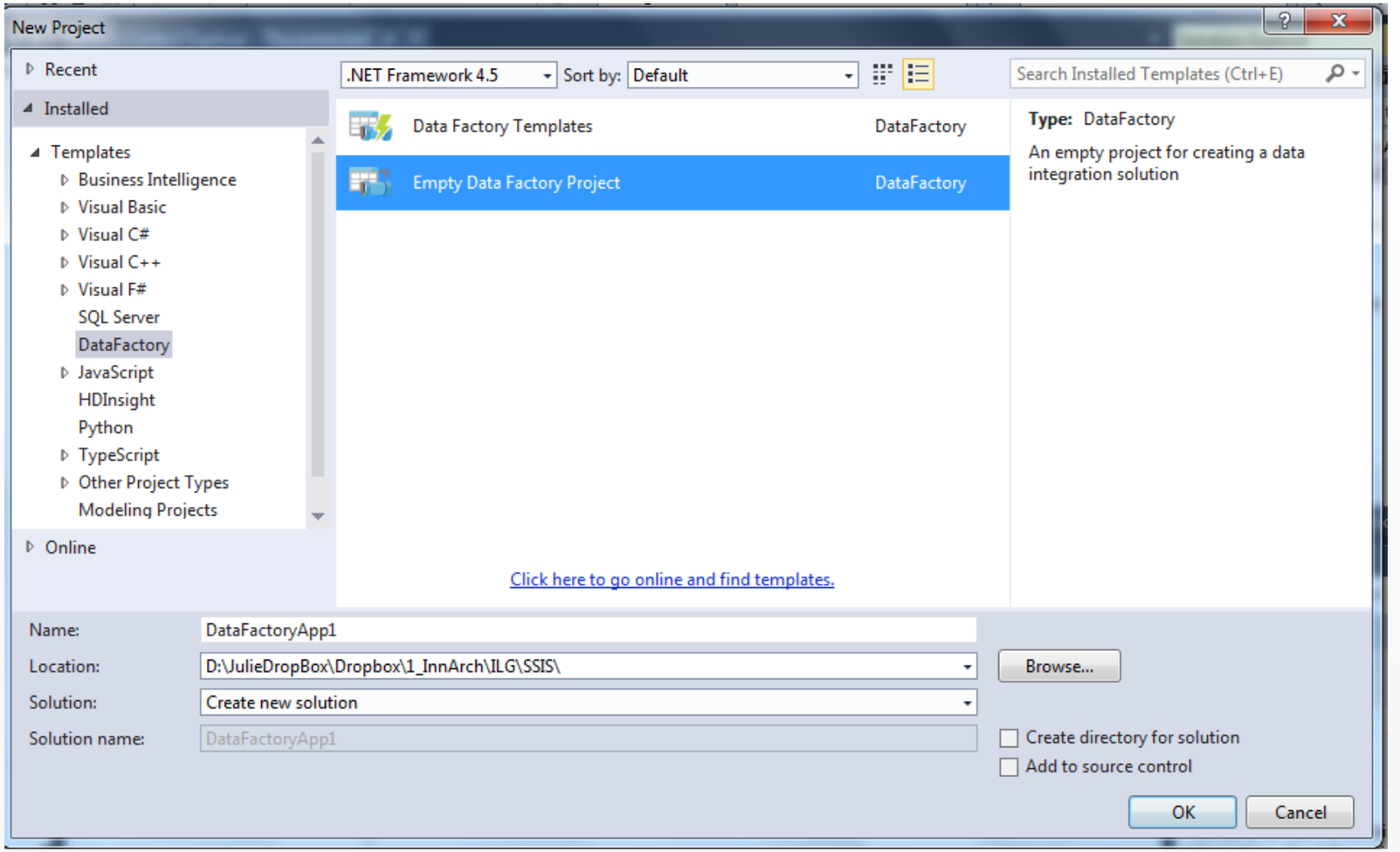


Diagram
DemoADFDramaticData
Data factory
PipelineActor
OnPremActorSrce
ON-PREMISES SQL DATABASE
1 activities
AzureSQLActorDestinationPureCopy
AZURE SQL DATABASE

Visual Studio Extension



JSON

JSON is built on two structures:

- A collection of **name/value** pairs. In various languages, this is realized as an *object*, record, struct, dictionary, hash table, keyed list, or associative array. { }
- An ordered list of values. In most languages, this is realized as an *array*, vector, list, or sequence. [ ]

JavaScript Object Notation
http://json.org

JSON in ADF, Dataset Example


```
{
    "name": "OnPremActorSrce",
    "properties": {
        "published": false,
        "type": "SqlServerTable",
        "linkedServiceName": "NorthWindStg",
        "typeProperties": {
            "tableName": "Actor"
        },
        "availability": {
            "frequency": "Day",
            "interval": 1
        },
        "policy": {
            "externalData": {
                "retryInterval": "00:01:00",
                "retryTimeout": "00:10:00",
                "maximumRetry": 3
            }
        }
    }
}
```

Access all your data

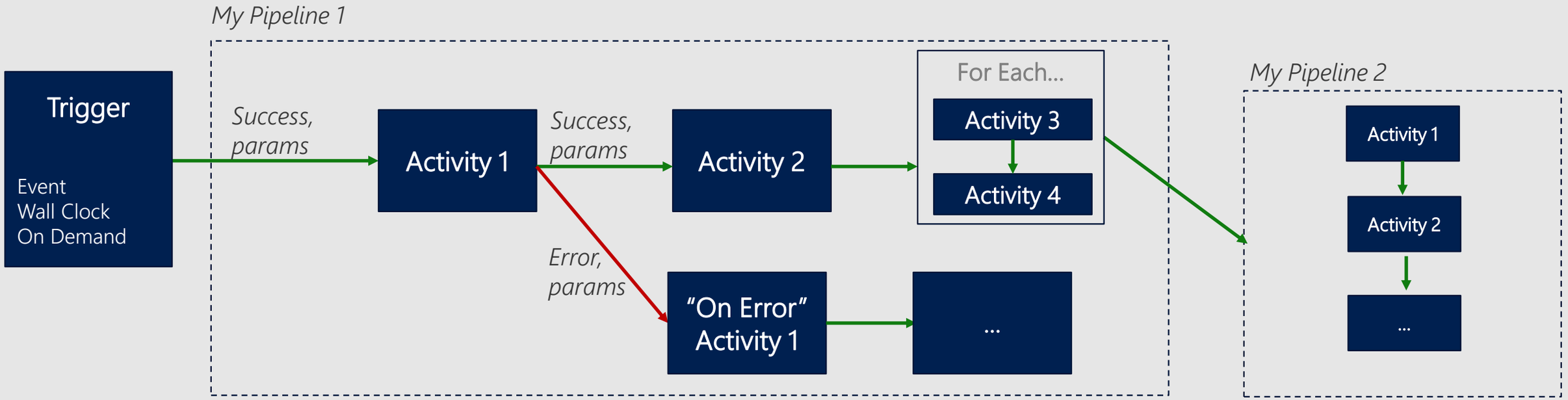
- 90+ connectors & growing
- Azure IR available in 20 regions
- Hybrid connectivity using self-hosted IR: on-prem & VNet

Azure	Database		File Storage	NoSQL	Services and Apps		Generic
Azure Blob Storage	Amazon Redshift	SQL Server	Amazon S3	Couchbase	Dynamics 365	Salesforce	HTTP
Azure Data Lake Store	Oracle	MySQL	File System	Cassandra	Dynamics CRM	Salesforce Service Cloud	OData
Azure SQL DB	Netezza	PostgreSQL	FTP	MongoDB	SAP C4C	ServiceNow	ODBC
Azure SQL DW	SAP BW	SAP HANA	SFTP		Oracle CRM	Hubspot	
Azure Cosmos DB	Google BigQuery	Informix	HDFS		Oracle Service Cloud	Marketo	
Azure DB for MySQL	Sybase	DB2			SAP ECC	Oracle Responsys	
Azure DB for PostgreSQL	Greenplum	MariaDB			Zendesk	Oracle Eloqua	
Azure Search	Microsoft Access	Drill			Zoho CRM	Salesforce ExactTarget	
Azure Table Storage	Hive	Phoenix			Amazon Marketplace	Atlassian Jira	
Azure File Storage	Hbase	Presto			Megento	Concur	
	Impala	Spark			PayPal	QuickBooks Online	
	Vertica				Shopify	Xero	
					GE Historian	Square	

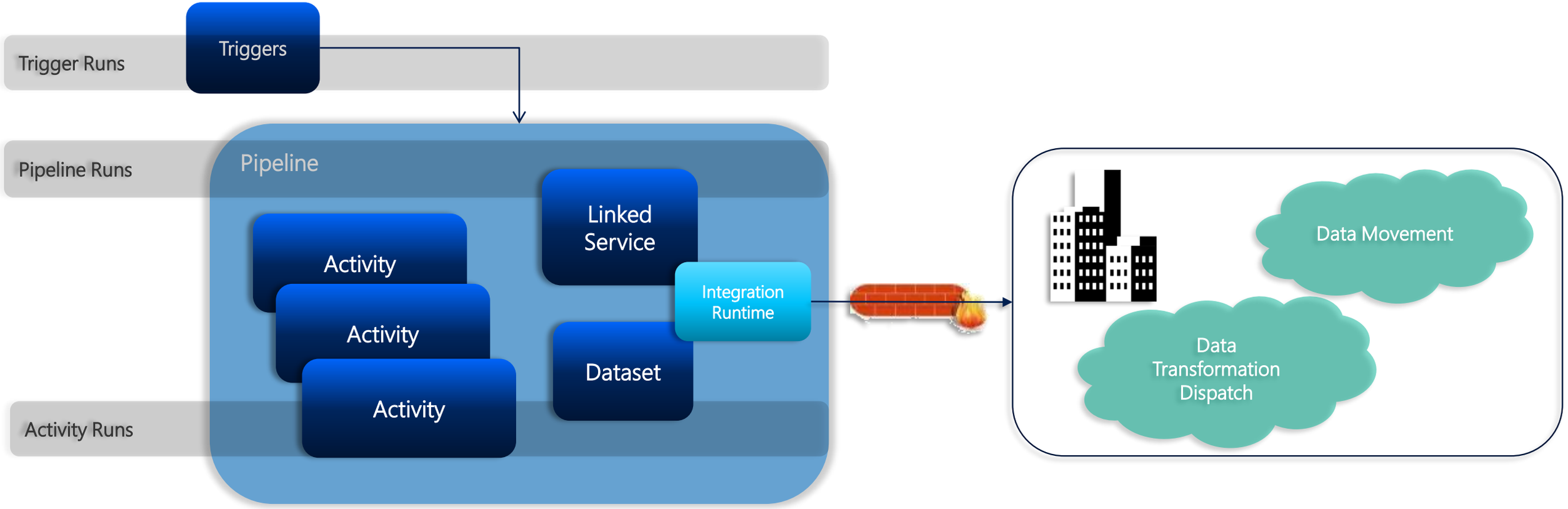
* Supported file formats: CSV, AVRO, ORC, Parquet, JSON

Control Flow Introduced in Azure Data Factory

Coordinate pipeline activities into finite execution steps to enable looping, conditionals and chaining while separating data transformations into individual data flows



Azure Data Factory Updated Flexible Application Model



ADF: Cloud-First Data Integration Objectives

- Consume hybrid disparate data
  - On-prem + Cloud
  - Grow ADF ecosystem of structured, un-structured, semi-structured data connectors
- Calculate and format data for analytics
  - Transform, aggregate, join, normalize
  - Separate data flow (transformation) from control flow (orchestration)
- Address large-scale Big Data requirements
  - Scale-up or Scale-out data movement and transformation
  - Support multiple processing engines
- Operationalize
  - Support flexible scheduling and triggering mechanism for broad range of use cases
  - Manage & monitor multiple pipelines (via Azure Monitor & OMS)
  - Support secure VNET environments
- Lift and Shift SSIS to the Cloud
  - Execute SSIS packages in ADF Integration Runtime

ADF: Cloud-First Data Integration Scenarios

Lift and Shift to the Cloud

- Migrate on-prem DW to Azure
- Lift and shift existing on-prem SSIS packages to cloud
- No changes needed to migrate SSIS packages to Cloud service

DW Modernization

- Modernizing DW arch to reduce cost & scale to needs of big data (volume, variety, etc)
- Flexible wall-clock and triggered event scheduling
- Incremental Data Load

Build Data-Driven, Intelligent SaaS Application

- C#, Python, PowerShell, ARM support

Big Data Analytics

- Customer profiling, Product recommendations, Sentiment Analysis, Churn Analysis, Customized offers, customer usage tracking, customized marketing
- On-demand Spark cluster support

Load your Data Lake

- Separate control-flow to orchestrate complex patterns with branching, looping, conditional processing

ADF V2 Improvements

- Integration Runtimes (IR) replace DMG, provide data movement and activity dispatch on-prem or in the cloud
- Supports resources within virtual networks
- Integration Runtime includes SSIS option to lift & shift SSIS packages to the Cloud
- Separation of “control flow” & “data flow” capabilities for more flexible pipeline management
- Looping, conditionals, dependencies, parameters
- Python SDK
- Built-in Source Control Support
- On-Demand Spark support
- Transform data in Azure Databricks
- Flexible pipeline scheduling with wall-clock, tumbling windows and triggered executions
- Expanded use cases: From primarily time window-oriented pipelines, to trigger-based on-demand for more flexible ETL and data integration orchestrations
- Graphical UI pipeline builder for a code-free experience

New ADF V2 Concepts

Concept	Description	Sample
Control Flow	Orchestration of pipeline activities that includes chaining activities in a sequence, branching, conditional branching based on an expression, parameters that can be defined at the pipeline level and arguments passed while invoking the pipeline on demand or from a trigger. Also includes custom state passing and looping containers, I.e. For-each, Do-Until iterators.	{ "name":"MyForEachActivityName", "type":"ForEach", "typeProperties":{ "isSequential":"true", "items":"@pipeline().parameters.mySinkDatasetFolderPathCollection", "activities":[{ "name":"MyCopyActivity", "type":"Copy", "typeProperties": …
Runs	A Run is an instance of the pipeline execution. Pipeline Runs are typically instantiated by passing the arguments to the parameters defined in the Pipelines. The arguments can be passed manually or properties created by the Triggers.	POST https://management.azure.com/subscriptions/<subId>/resourceGroups/<resourceGroupName>/providers/Microsoft.DataFactory/factories/<dataFactoryName>/pipelines/<pipelineName>/createRun?api-version=2017-03-01-preview
Activity Logs	Every activity execution in a pipeline generates activity start and activity end logs event	
Integration Runtime	Replaces DMG as a way to move & process data in Azure PaaS Services, self-hosted or on prem or IaaS Works with VNETs Enables SSIS package execution	Set-AzureRmDataFactoryV2IntegrationRuntime -Name $integrationRuntimeName -Type SelfHosted

Scheduling	Flexible Scheduling
	Wall-clock scheduling
	Event-based triggers
		"type": "ScheduleTrigger",
		"typeProperties": {
		"recurrence": {
		"frequency": <<Minute, Hour, Day, Week, Year>>,
		"interval": <<int>>, // optional, how often to fire (default to 1)
		"startTime": <<datetime>>,
		"endTime": <<datetime>>,
		"timeZone": <<default UTC>>
		"schedule": { // optional (advanced scheduling specifics)
		"hours": [<<0-24>>],
		"weekDays": ": [<<Monday-Sunday>>],
		"minutes": [<<0-60>>],
		"monthDays": [<<1-31>>],
		"monthlyOccurences": [
		{
		"day": <<Monday-Sunday>>,
		"occurrence": <<1-5>>

New ADF V2 Concepts

Concept	Description	Sample
On-Demand Execution	Instantiate a pipeline by passing arguments as parameters defined in a pipeline and execute from script / REST / API.	Invoke-AzureRmDataFactoryV2PipelineRun -DataFactory $df -PipelineName "Adfv2QuickStartPipeline" -ParameterFile .\PipelineParameters.json
Parameters	Name-value pairs defined in the pipeline. Arguments for the defined parameters are passed during execution from the run context created by a Trigger or pipeline executed manually. Activities within the pipeline consume the parameter values. A **Dataset** is a strongly typed parameter and a reusable/referenceable entity. An activity can reference datasets and can consume the properties defined in the Dataset definition A **Linked Service** is also a strongly typed parameter containing the connection information to either a data store or a compute environment. It is also a reusable/referenceable entity.	Accessing parameters of other activities Using expressions @parameters("{name of parameter}") @activity("{Name of Activity}").output.RowsCopied

Incremental Data Loading	Leverage parameters and define your high-water mark for delta copy while moving dimension or reference tables from a relational store either on premises or in the cloud to load the data into the lake	name": "LookupWaterMarkActivity",
		"type": "Lookup",
		"typeProperties": {
		"source": {
		"type": "SqlSource",
		"sqlReaderQuery": "select * from watermarktable"
		}

On-Demand Spark	Support for on-demand HDI Spark clusters, similar to on-demand Hadoop activities in V1	"type": "HDInsightOnDemand", "typeProperties": { "clusterSize": 2, "clusterType": "spark", "timeToLive": "00:15:00",
SSIS Runtime	Lift & shift, deploy, manage, monitor SSIS packages in the cloud with SSIS Azure IR Service in Azure Data Factory	Start-AzureRmDataFactoryV2IntegrationRuntime -DataFactoryName $DataFactoryName -Name
Code-free UI	Build end-to-end data pipeline solutions for ADF without writing code or JSON	

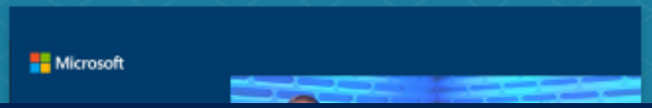
Azure Data Factory

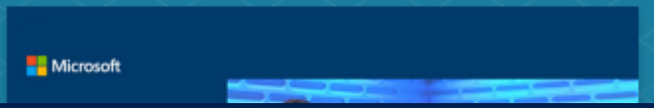
Let's get started

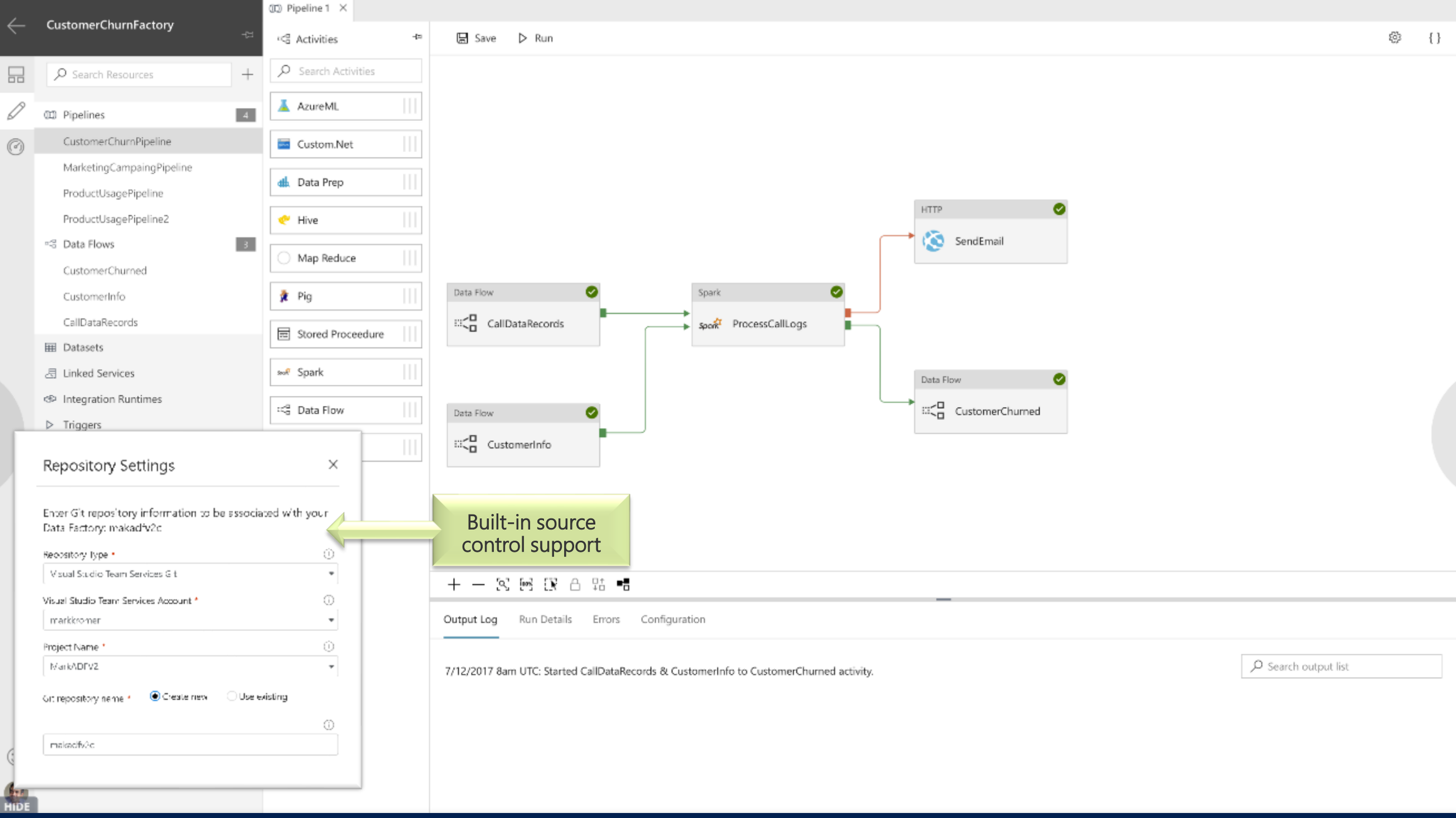
Create pipeline | Create data flow | Create pipeline from template | Copy data | Configure SSIS Integration | Set up code repository

Videos

View all videos






CustomerChurnFactory
Search Resources
Pipelines 4
CustomerChurnPipeline
MarketingCampaingPipeline
ProductUsagePipeline
ProductUsagePipeline2
Data Flows 3
CustomerChurned
CustomerInfo
CallDataRecords
Datasets
Linked Services
Integration Runtimes
Triggers
Pipeline 1
Activities
Search Activities
AzureML
Custom.Net
Data Prep
Hive
Map Reduce
Pig
Stored Proceedure
Spark
Data Flow
Save
Run
HTTP
SendEmail
Data Flow
CallDataRecords
Spark
ProcessCallLogs
Data Flow
CustomerInfo
Data Flow
CustomerChurned
Repository Settings
Enter Git repository information to be associated with your Data Factory: makadfv2c
Repository Type *
Visual Studio Team Services Git
Visual Studio Team Services Account *
markkromer
Project Name *
MarkADFV2
Git repository name *
Create new
Use existing
makadfv2c
Built-in source control support
Output Log
Run Details
Errors
Configuration
7/12/2017 8am UTC: Started CallDataRecords & CustomerInfo to CustomerChurned activity.
Search output list
HIDE

CustomerChurnPipeline | CallDataRecords

Toolbox

Search

Source

File

Azure Blob Storage

Amazon S3

Relational

Azure SQL Database

Azure SQL Data Ware...

Sink

File

Azure Blob Storage

Amazon S3

Relational

Azure SQL Database

Azure SQL Data Ware...

Save | Validate

Settings

General | Mapping

Mapping Options

Automatic

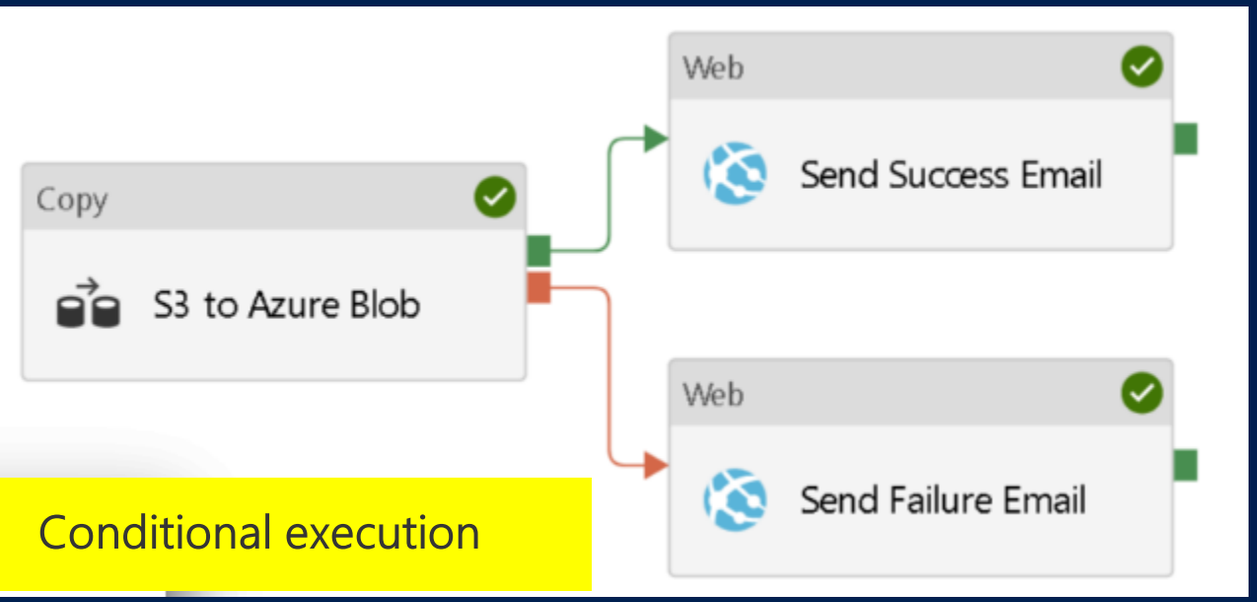
Auto Map

Source fields: 25 / 25 mapped

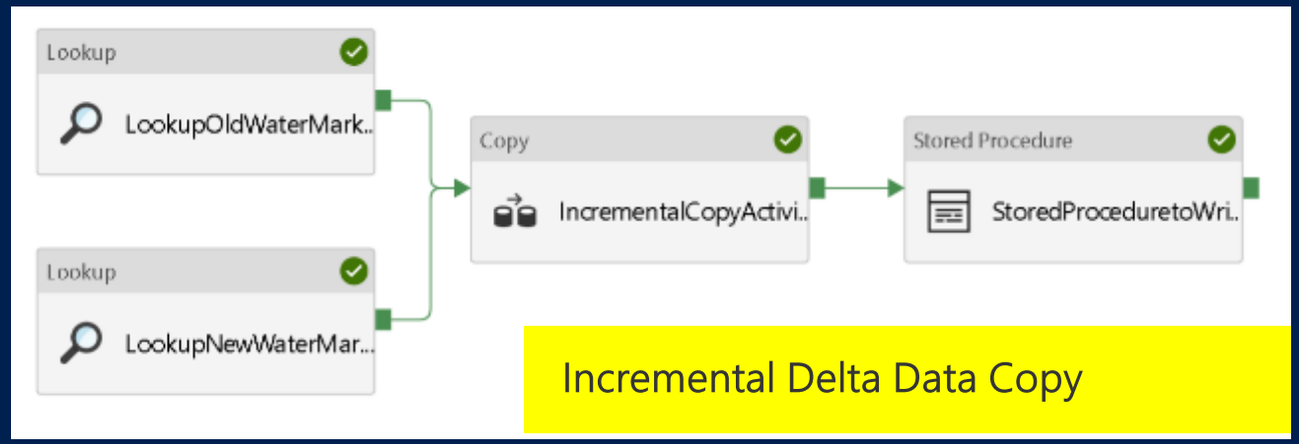
Sink fields: 25 / 25 mapped

FIELD	TYPE	FIELD	TYPE
Age	int	Age	int
AnnualIncome	BigInt	AnnualIncome	BigInt
CallDropRate	Double	CallDropRate	Double
CallFailureRate	Double	CallFailureRate	Double
CallingNum	String	CallingNum	String
CustomerID	Int	CustomerID	Int
CustomerSuspended	String	CustomerSuspended	String
Education	String	Education	String
Gender	String	Gender	String
HomeOwner	String	HomeOwner	String
MaritalStatus	String	MaritalStatus	String
MonthlyBilledAmount	Int	MonthlyBilledAmount	Int
NoAdditionalLines	Int	NoAdditionalLines	Int

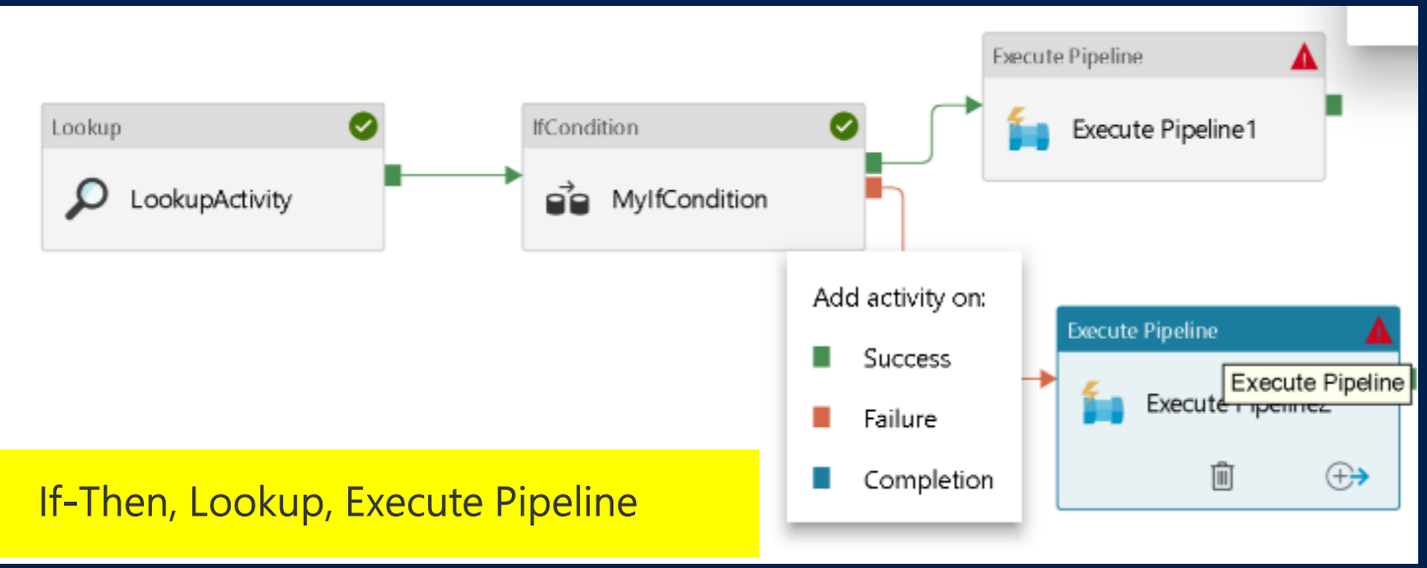
HIDE



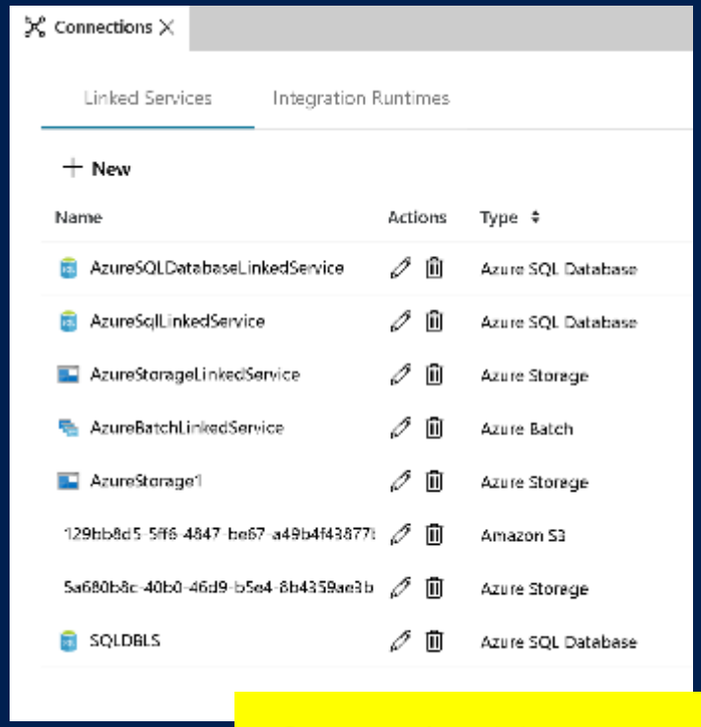
Conditional execution



Incremental Delta Data Copy



If-Then, Lookup, Execute Pipeline



Connection Managers

myadfv2 | Monitor **Pipeline Runs**

Operationalize – Monitor your data pipelines

Refresh

Custom Range 11/01/2017 9:00 AM - 12/23/2017 9:00 AM

Time Zone (UTC-08:00) Los Angeles

All | Succeeded | In Progress | Failed

Pipeline Name	Actions	Run Start	Duration	Triggered By	Status	Parameters	Error	RunID
LookupPipeline		12/04/2017, 4:59:33 PM	00:00:49	Manual trigger	Succeeded			8fd7c2e1-440c-45d7-aff0-21dc8552c207
LookupPipeline		12/04/2017, 4:56:24 PM	00:00:53	Manual trigger	Succeeded			ecd6bec4-b7b8-47b0-aaac-c32ba199a5ff
LookupPipeline		12/04/2017, 4:53:34 PM	00:00:33	Manual trigger	Failed			c272ebf7-f784-4d8c-9b82-c5e10f06250b
LookupPipeline		12/04/2017, 4:20:25 PM	00:00:29	Manual trigger	Failed			6018a772-81c8-4ec0-ab18-24424c25195c
LookupPipeline		12/04/2017, 4:10:50 PM	00:00:33	Manual trigger	Failed			06c7db30-d77b-47d2-917a-935244f1c2c5
pipeline4__7e0990af-c...		11/27/2017, 11:12:27 AM	00:00:05	Manual trigger	Failed			c3aa1144-ebdc-448b-a1b8-9f1b5d65cb40
MyWebActivityPipeline		11/26/2017, 9:37:02 PM	00:00:10	Manual trigger	Failed			23c5e44c-a191-4a1f-ac21-ff276b7da43b
batchpipe		11/17/2017, 3:24:19 PM	00:00:38	Manual trigger	Succeeded			b2ef549a-b5cf-4786-9ffd-f9f71948c6d9
batchpipe		11/17/2017, 3:20:12 PM	00:00:00	Manual trigger	Failed			a3dec17f-a370-4e8b-9a3e-285483680fde
ifconditionpipeline2		11/16/2017, 6:00:20 PM	00:00:04	Manual trigger	Failed			07b7812d-0af0-4f67-a0b8-ec64ddd38fc9
ifconditionpipeline		11/16/2017, 6:00:11 PM	00:00:05	Manual trigger	Failed			8ac7565d-eefd-4831-92c5-33bfebdf2c60
ifconditionpipeline		11/15/2017, 4:58:45 PM	00:00:07	Manual trigger	Succeeded			dcff3e04-6158-40e7-b21d-70d417ae646f
ifconditionpipeline		11/15/2017, 4:52:36 PM	00:00:06	Manual trigger	Failed			f1d615ca-f4d9-47bf-930b-0bc47dbb3430
pipeline3__9a1f3c55-e...		11/10/2017, 2:52:13 PM	00:00:05	Manual trigger	Failed			052056da-9cd6-48c8-8441-4d11feb911a4
IncrementalCopyPipeli...		11/01/2017, 2:02:16 PM	00:01:36	Manual trigger	Succeeded			f176d4e0-1535-4aec-8eca-25dc7a4b0e80
IncrementalCopyPipeli...		11/01/2017, 1:56:06 PM	00:01:13	Manual trigger	Succeeded			1f3d9bc2-9b30-4245-9489-786ca77796ca
IncrementalCopyPipeli...		11/01/2017, 1:49:30 PM	00:00:36	Manual trigger	Failed			7824bd16-9e72-4409-ae80-238faf861a5c

Copy Data

1 Properties
One time copy

2 Source
- Connection
- Dataset

3 Destination

4 Settings
Fault tolerance

5 Summary

6 Deployment

Source data store

Specify the source data store for the copy task. You can use an existing data store connection or specify a new data store. Click HERE to suggest new copy sources or give comments.

Easy-to-use Wizard for Copying Data at Scale

FROM EXISTING CONNECTIONS | CONNECT TO A DATA STORE


Amazon Redshift

Amazon S3


Azure Blob Storage


Azure Cosmos DB


Azure Data Lake Store

Azure Database for MySQL


Azure Database for PostgreSQL


Azure File Storage

Azure SQL Data Warehouse

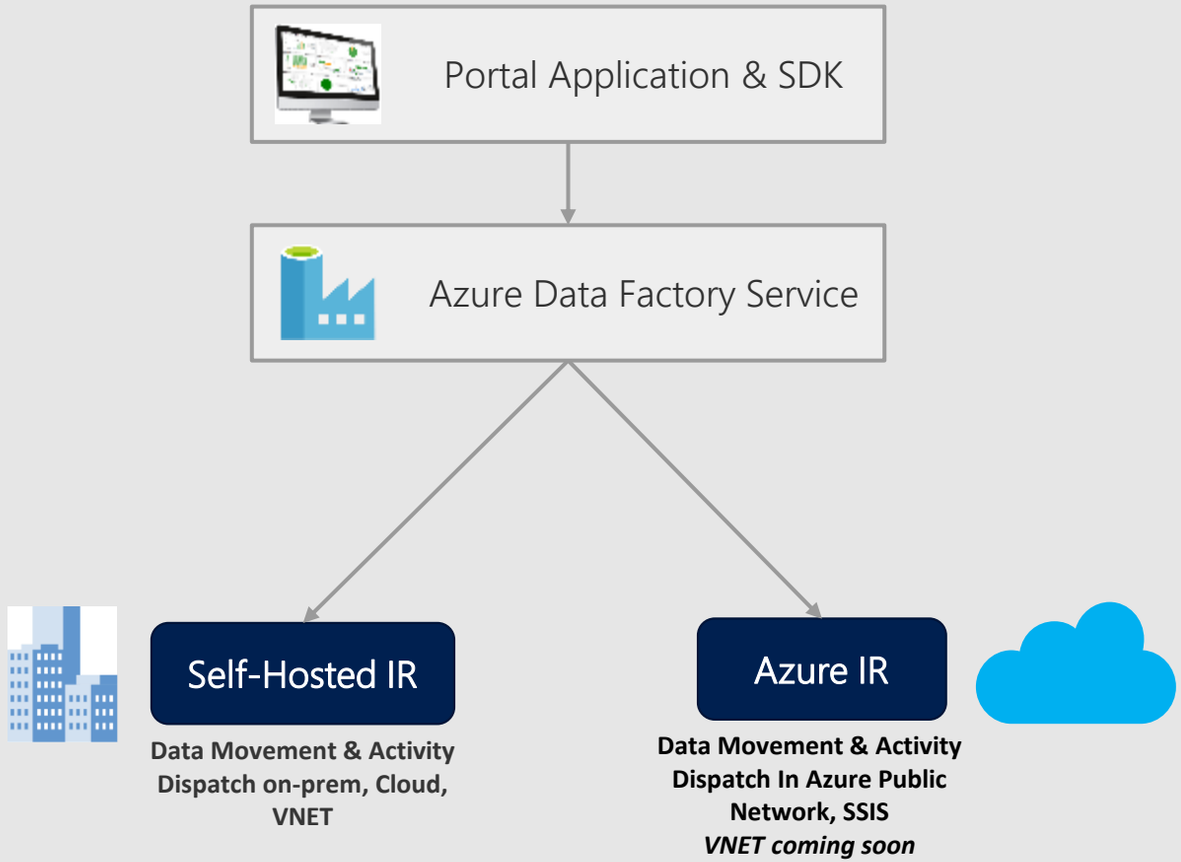
Azure SQL Database


Azure Table Storage

Cassandra

Previous | Next

ADF Integration Runtime (IR)



- ADF compute environment with multiple capabilities:
  - Activity dispatch & monitoring
  - Data movement
  - SSIS package execution
- To integrate data flow and control flow across the enterprises' hybrid cloud, customer can instantiate multiple IR instances for different network environments:
  - On premises (similar to DMG in ADF V1)
  - In public cloud
  - Inside VNet
- Bring a consistent provision and monitoring experience across the network environments

Command & Control

Data Flow

UX & SDK

Authoring | Monitoring/Mgmt

Azure Data Factory Service

Scheduling | Orchestration | Monitoring

On Premises Apps & Data

SAP

TERADATA

Microsoft SQL Server

cloudera

Hortonworks

ORACLE

Cloud Apps, Svcs & Data

amazon web services

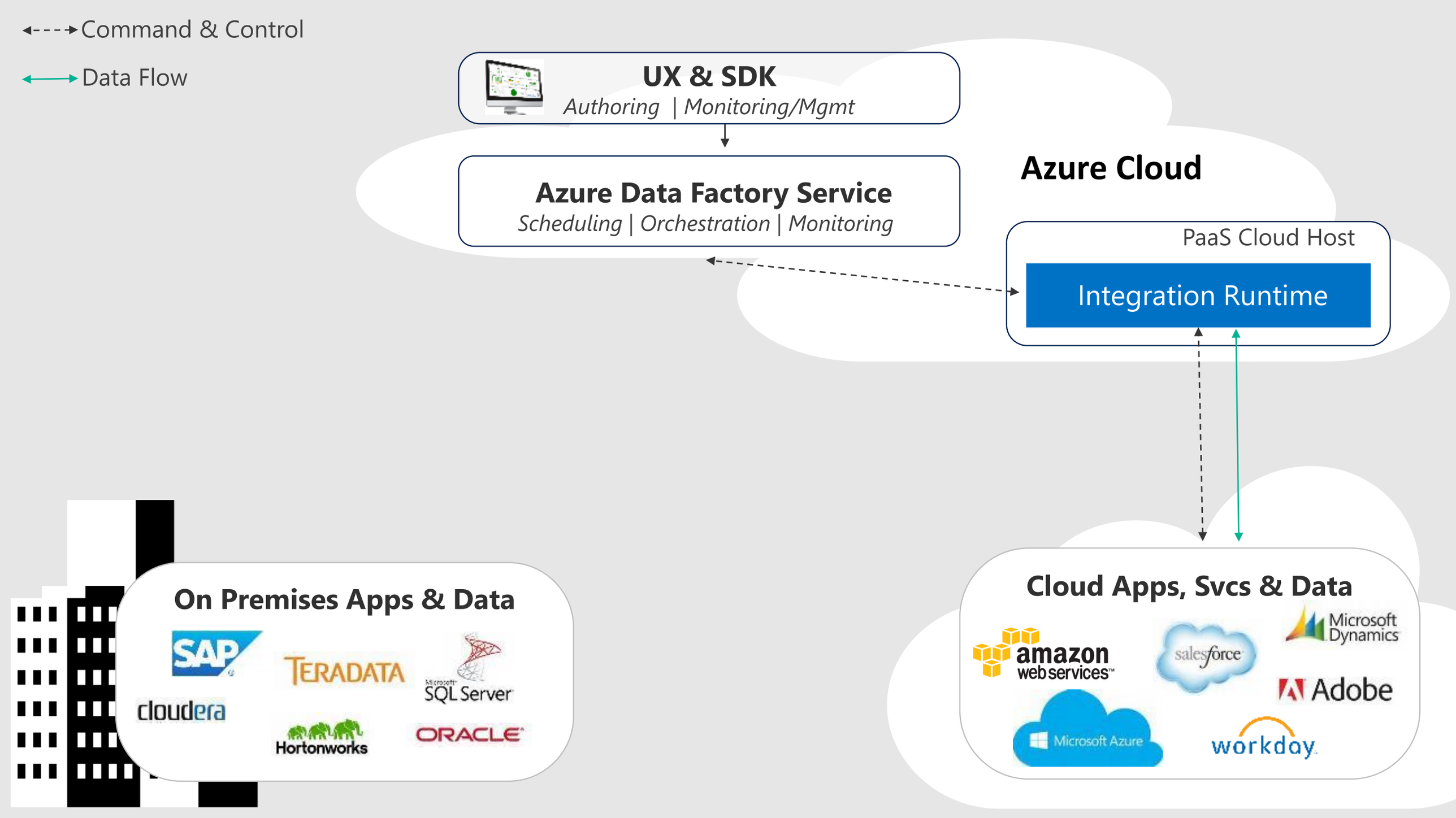
salesforce

Microsoft Dynamics

Adobe

Microsoft Azure

workday.


Command & Control
Data Flow
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Azure Cloud
PaaS Cloud Host
Integration Runtime
On Premises Apps & Data
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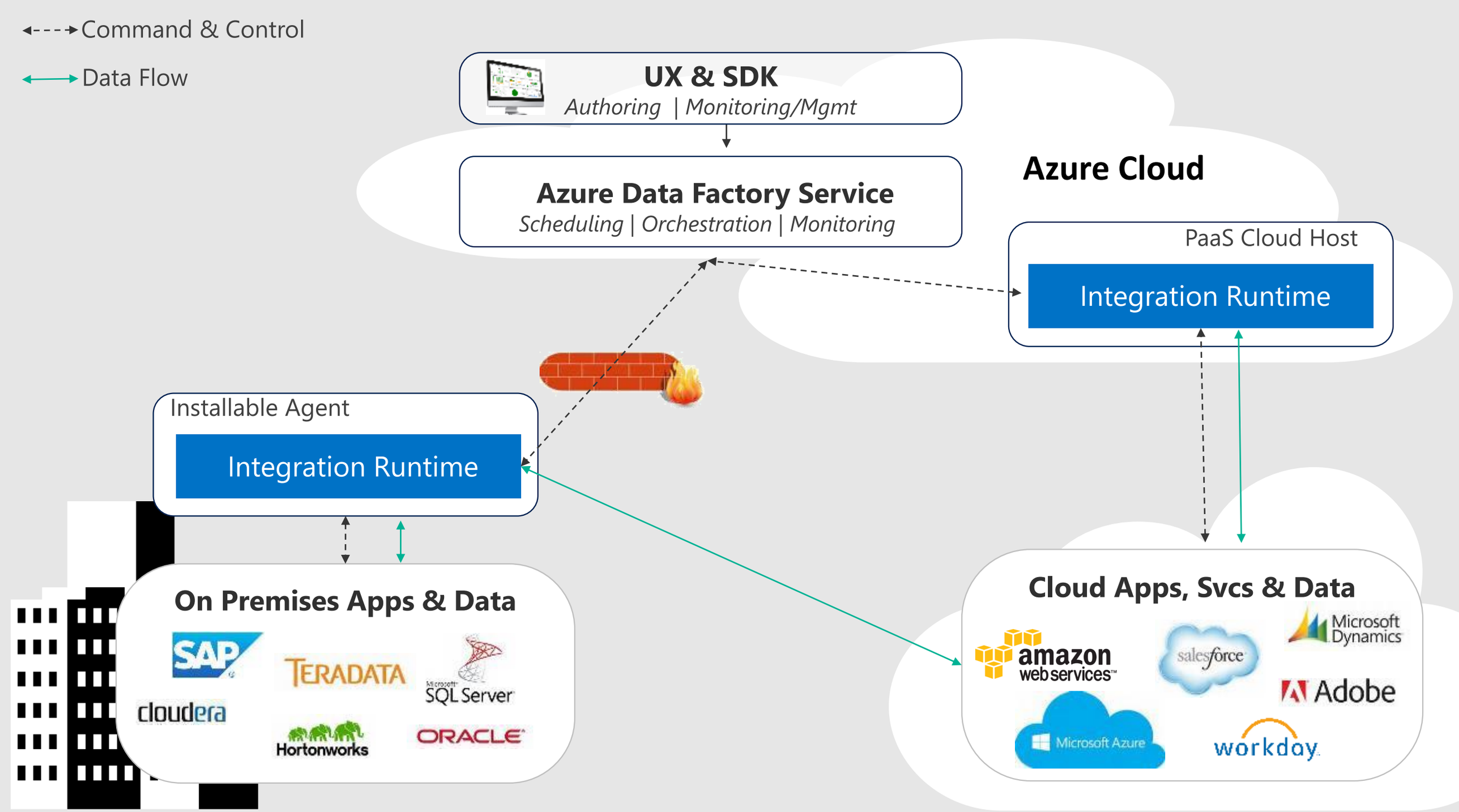
Command & Control
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Authoring | Monitoring/Mgmt
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PaaS Cloud Host
Integration Runtime
Installable Agent
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Adobe
Microsoft Azure
workday

Command & Control

Data Flow

UX & SDK

Authoring | Monitoring/Mgmt

Azure Data Factory Service

Scheduling | Orchestration | Monitoring

Azure Cloud

PaaS Cloud Host

ntime

Insta

Integration Runtime

- **Activity Dispatch/Monitor (spark, copy, ml, etc)**
- **Data Movement**
- **SSIS Package Execution**

On Premises Apps & Data

SAP

TERADATA

Microsoft SQL Server

cloudera

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ORACLE

Cloud Apps, Svcs & Data

amazon web services

salesforce

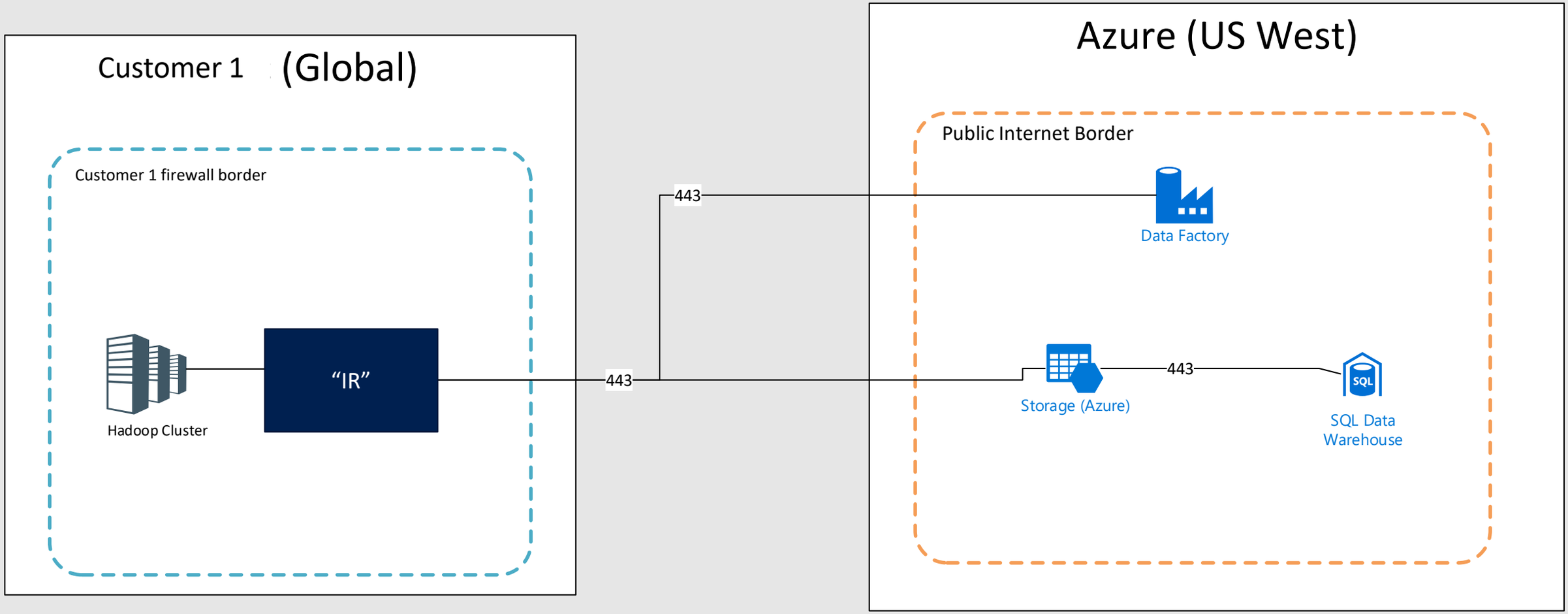
Microsoft Dynamics

Adobe

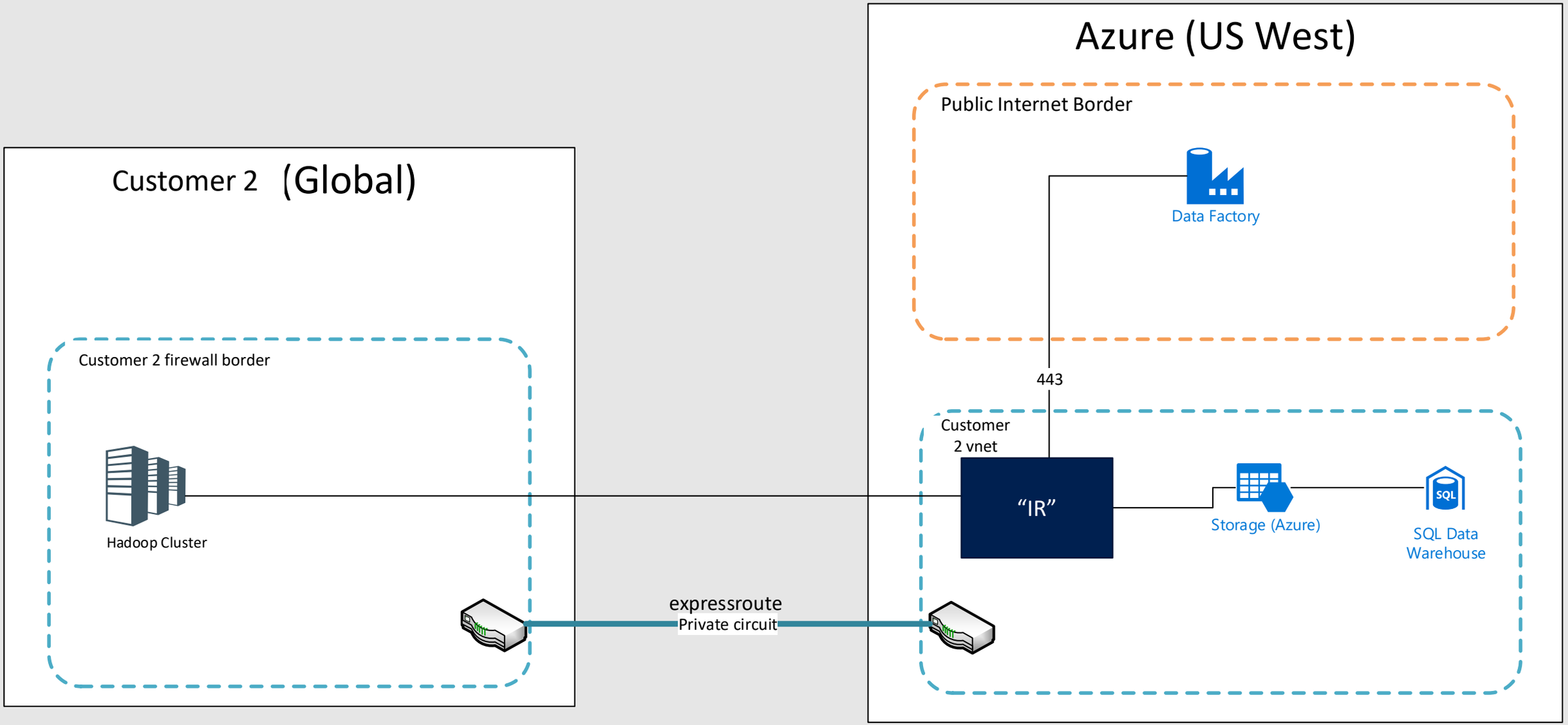
Microsoft Azure

workday

Azure Data Factory “Integration Runtime” deployed on premises for transformation and then moved to cloud



Azure Data Factory “Integration Runtime” deployed inside VNet



Integration Runtime Setup

Integration Runtime is the native compute used by ADF to execute or dispatch activities. Choose what integration runtime to create based on required capabilities.

Perform data movement and dispatch activities to external computes.

Lift-and-shift existing SSIS packages to execute in Azure.

Integration Runtime Setup

Choose the network environment of the data source/destination or external compute the integration runtime will connect to for data movement or dispatch activities:

Public Network

Private Network

Integration Runtime Setup

ADF manages the integration runtime in Azure to connect to required data source/destination or external compute in public network. The compute resource is elastic allocated based on performance requirement of activities.

Name *

integrationRuntime3

Description

Enter description here...

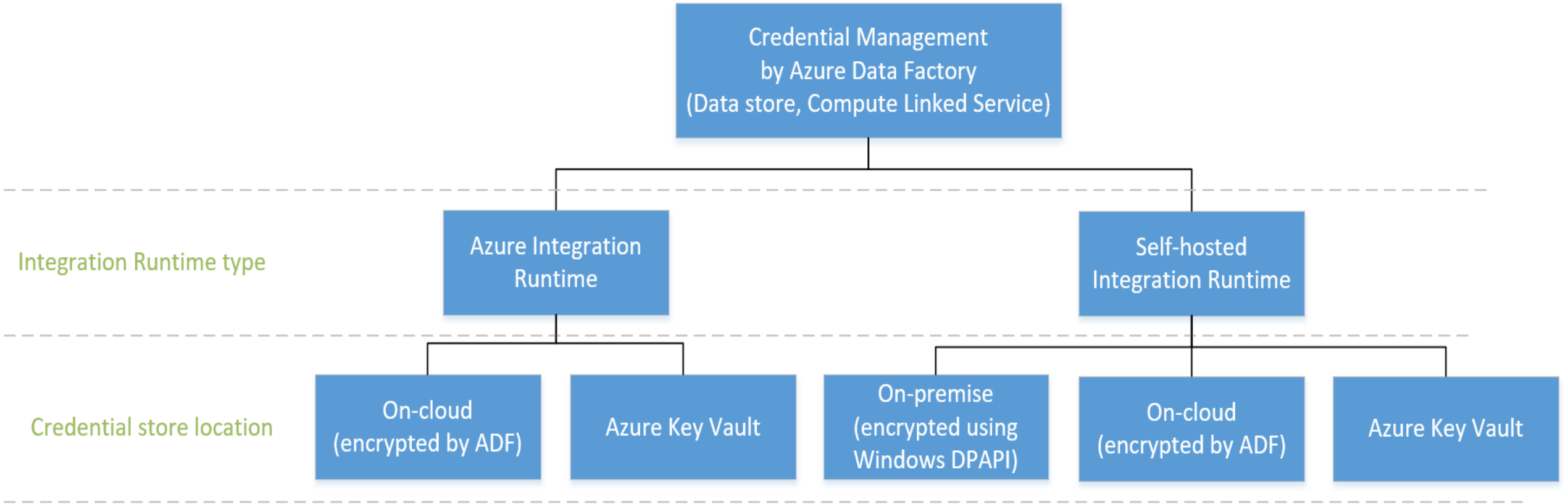
Type

Azure

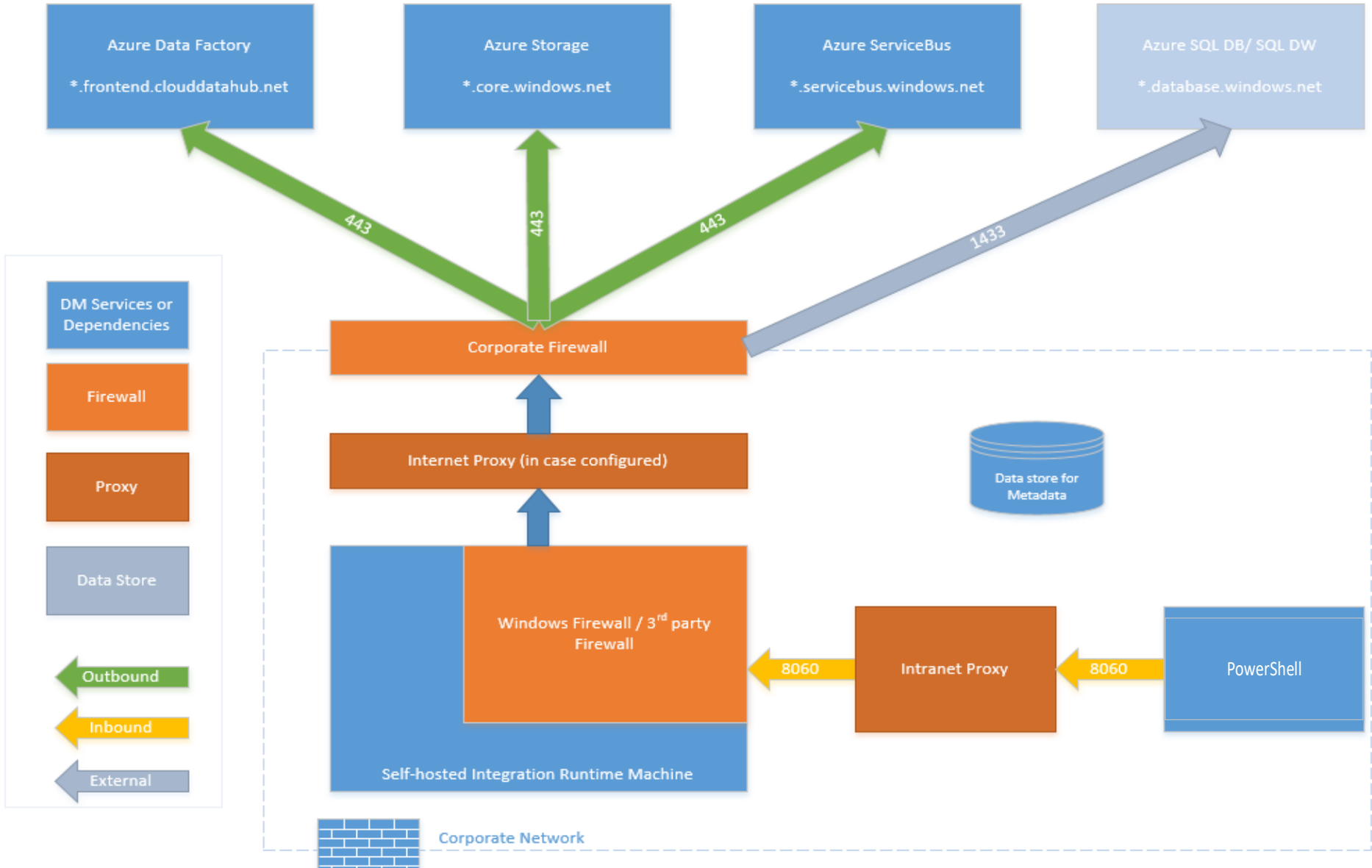
Region *

Central US

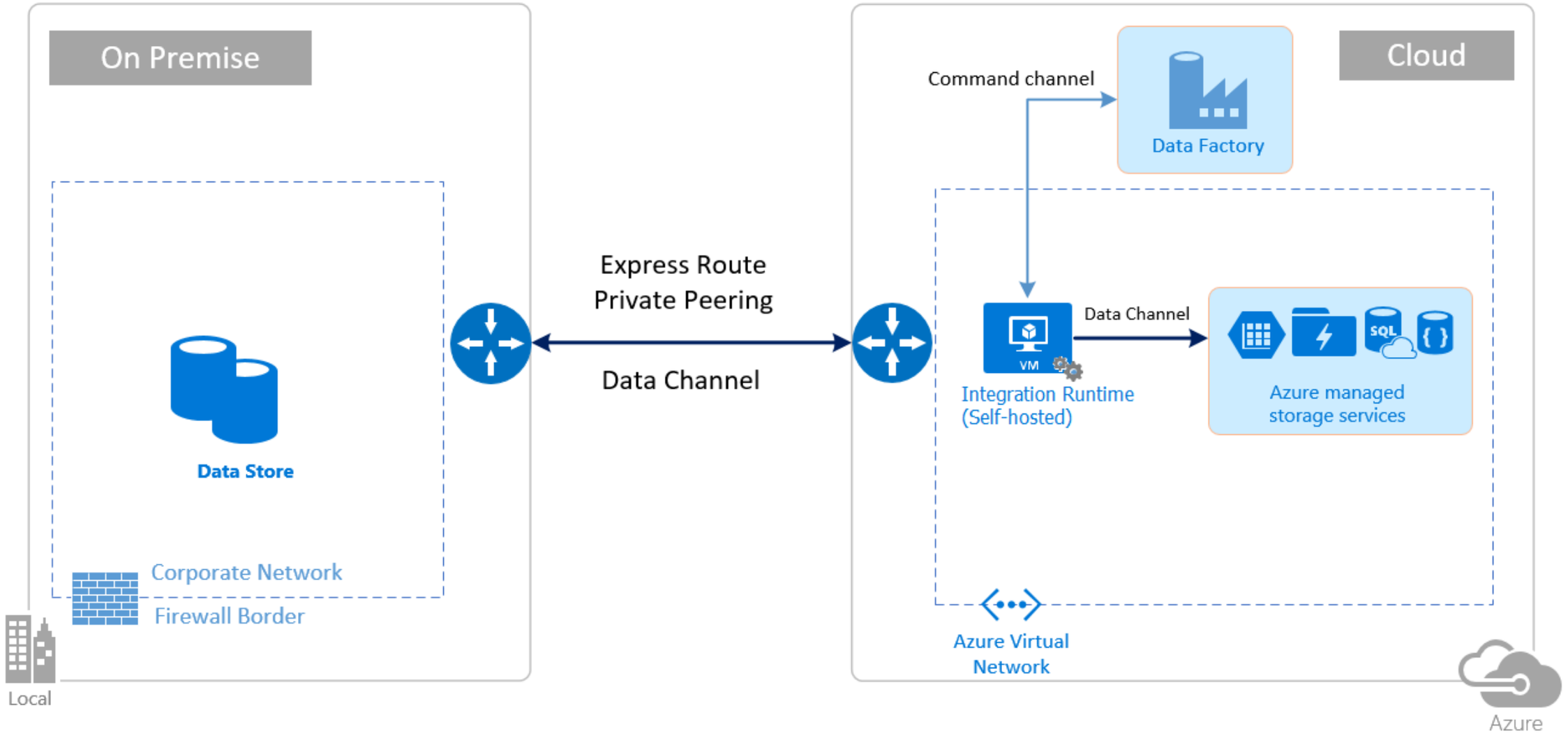
Credential Management (Linked service)



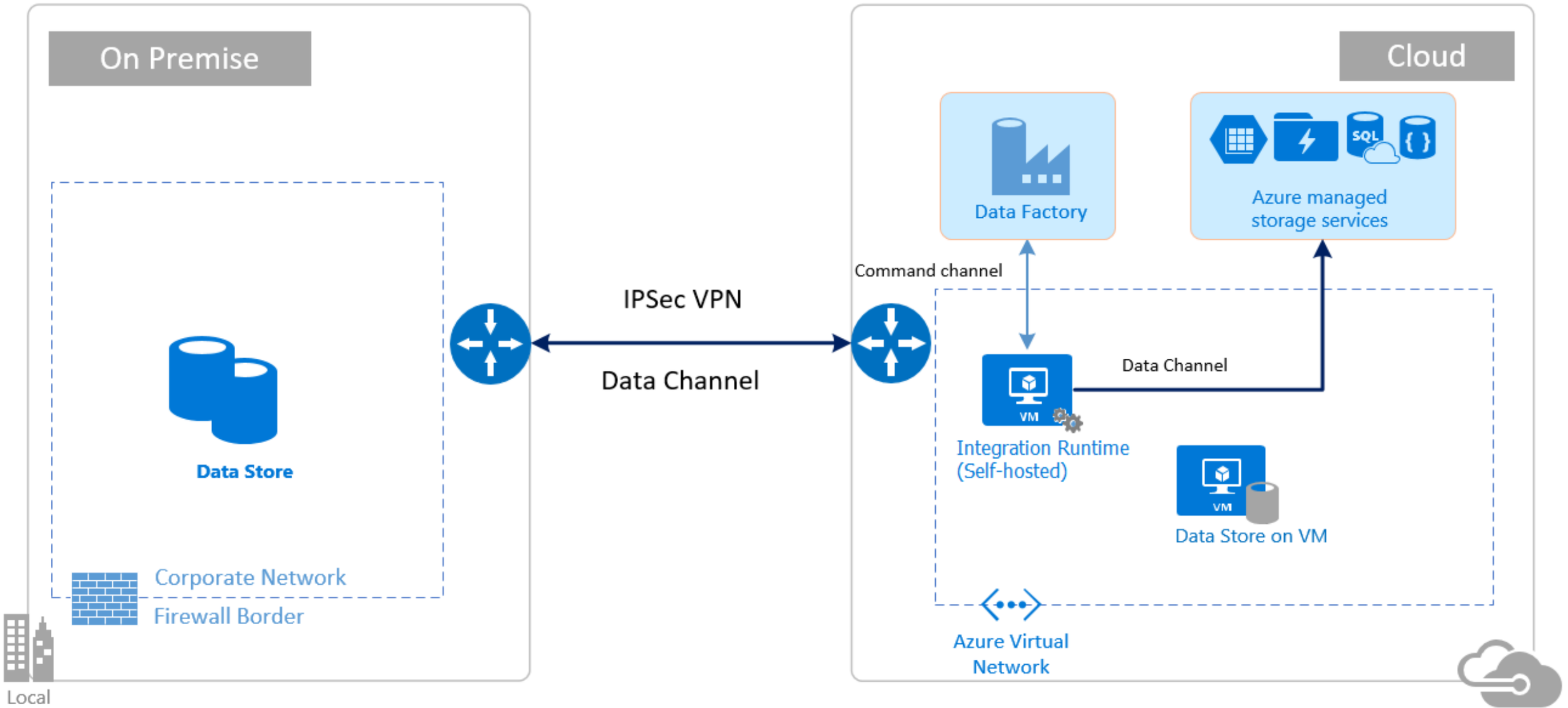
Self-hosted IR – Firewall Requirements



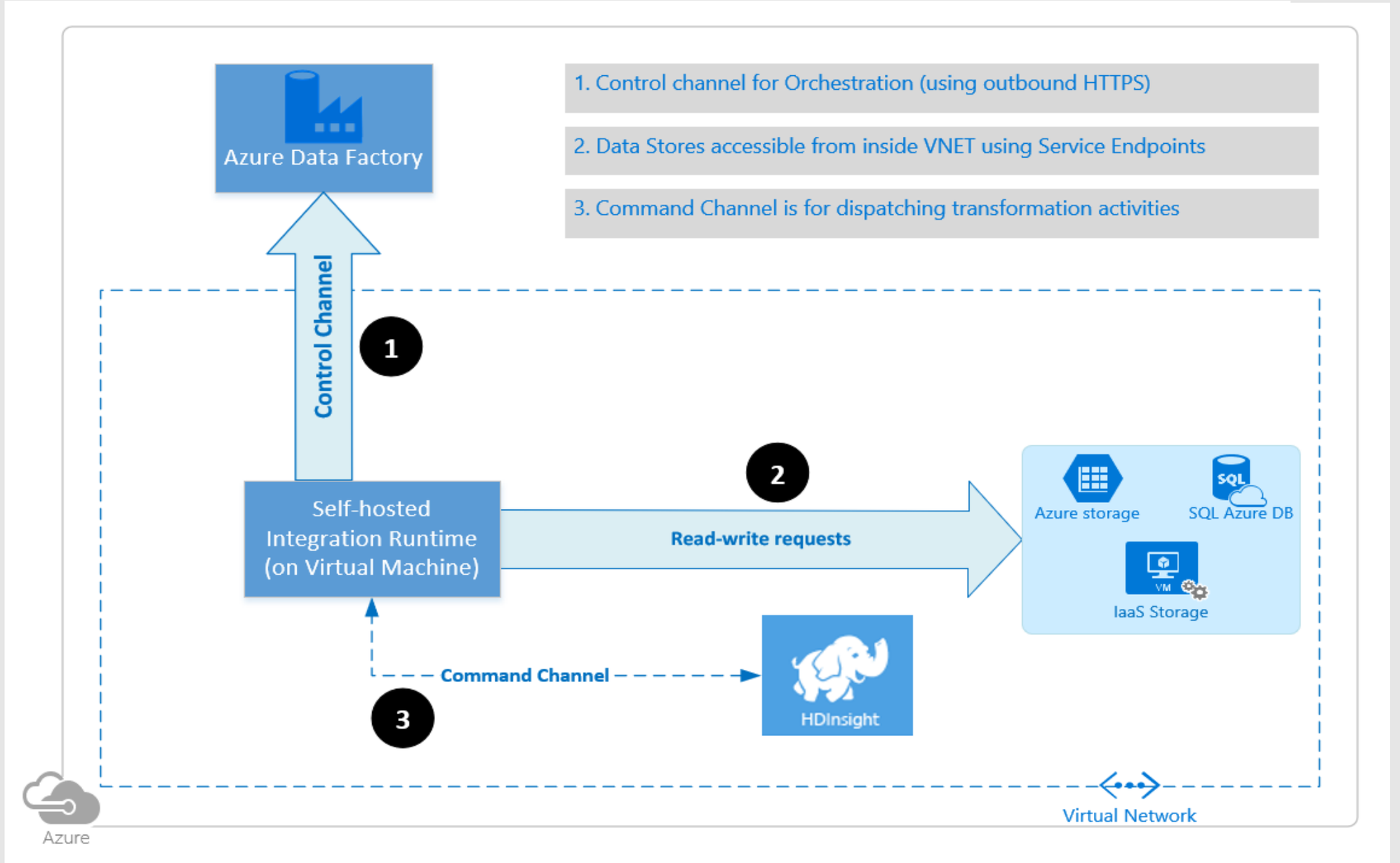
Network Topology (with ExpressRoute)



Network Topology (with VPN)



VNet


Azure Data Factory
1. Control channel for Orchestration (using outbound HTTPS)
2. Data Stores accessible from inside VNET using Service Endpoints
3. Command Channel is for dispatching transformation activities
Control Channel
1
Self-hosted
Integration Runtime
(on Virtual Machine)
2
Read-write requests
Azure storage
SQL Azure DB
VM
IaaS Storage
Command Channel
3
HDInsight
Virtual Network
Azure

ADF Certifications

HIPAA/HITECH

ISO/IEC 27001

ISO/IEC 27018

CSA STAR

Customer Insights

- SSIS is a traditional ETL tool that comes bundled with SQL Server on premises
  - Has been around for more than 10 years
  - Some customers have started to lift & shift their ETL workloads to the cloud to reduce their on-prem infra, but found managing Infrastructure as a Service (IaaS)/VMs challenging

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- Azure Data Factory (ADF) is a modern ELT tool that moves/copies data and dispatches transformations for Big Data Analytics in the cloud
  - Some gaps in ELT workflows can be filled w/ code-free authoring of transformations/built-in tasks from SSIS
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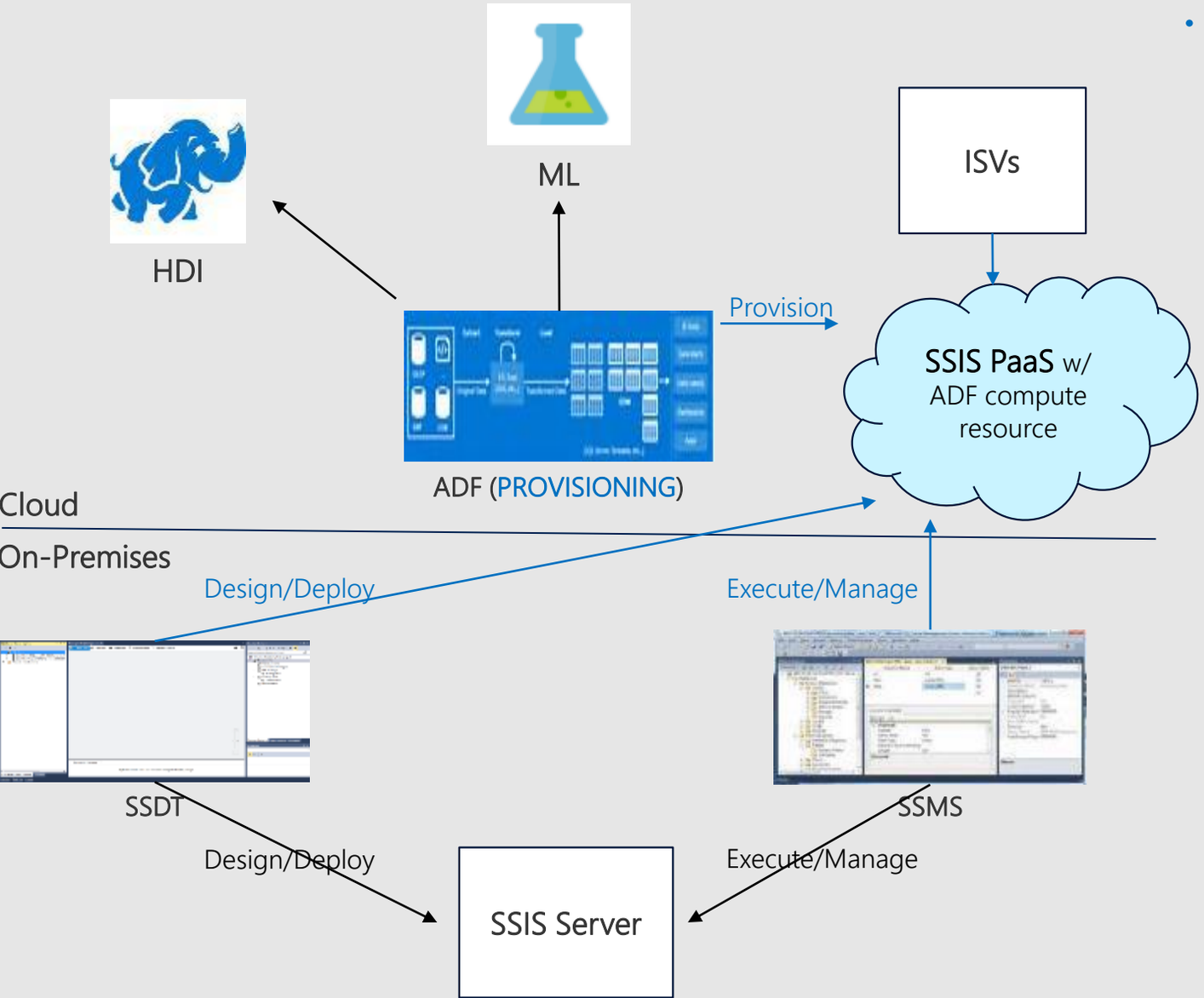
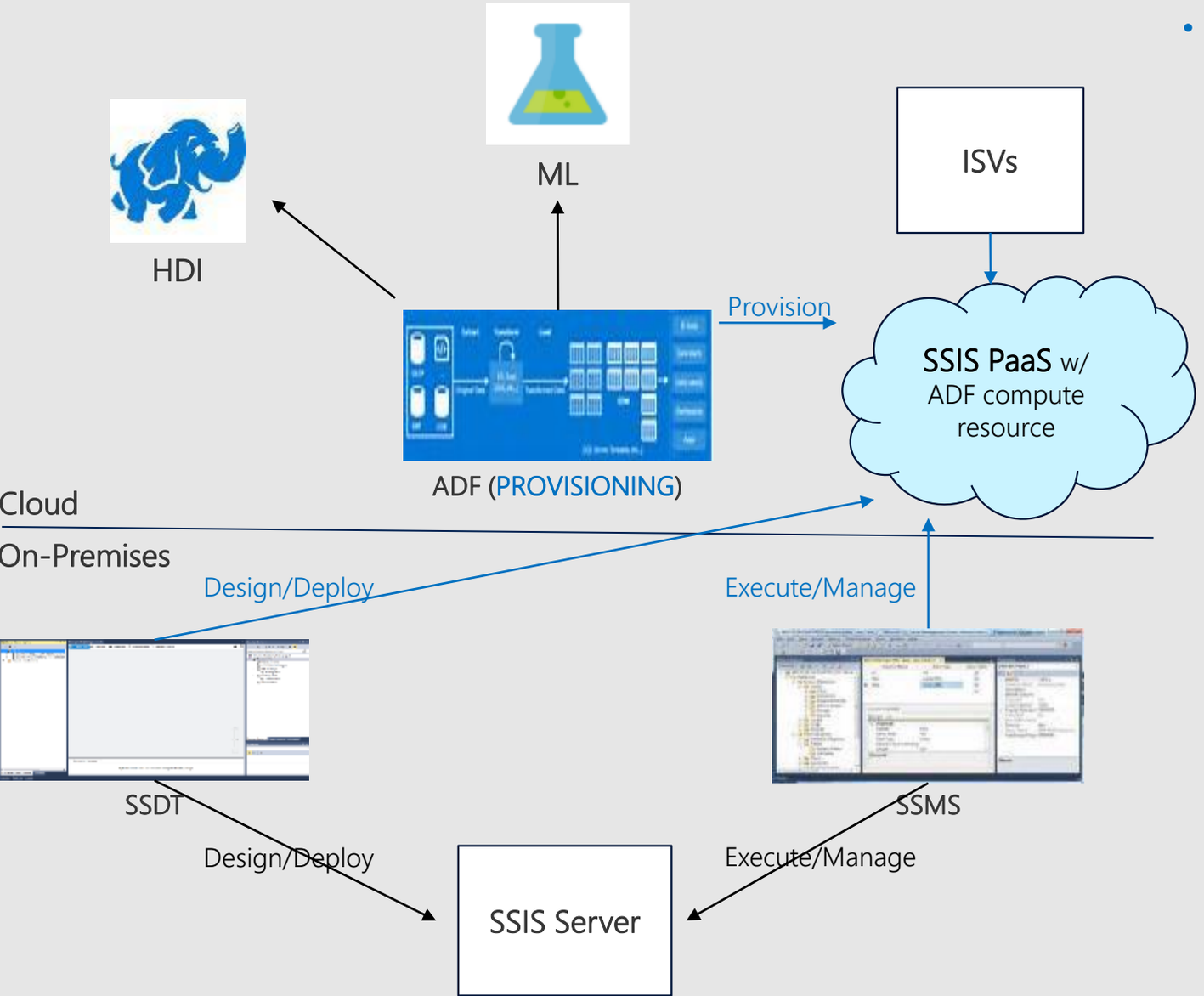
  - Some customers have started to combine ADF with SSIS on IaaS/VMs, but found managing IaaS/VMs challenging
- Evolution of a cloud-first product: SSIS on premises -> IaaS -> PaaS
  - The stage is set for SSIS PaaS…

Microsoft ETL/ELT Services in Azure



- Introducing Azure-SSIS IR: Managed cluster of Azure VMs (nodes) dedicated to run your SSIS packages and no other activities
  - You can scale it up/out by specifying the node size /number of nodes in the cluster
  - You can bring your own Azure SQL Database (DB)/Managed Instance (MI) server to host the catalog of SSIS projects/packages (**SSISDB**) that will be attached to it
  - You can join it to a Virtual Network (VNet) that is connected to your on-prem network to enable on-prem data access
  - Once provisioned, you can enter your Azure SQL DB/MI server endpoint on SSDT/SSMS to deploy SSIS projects/packages and configure/execute them just like using SSIS on premises

Microsoft ETL/ELT Services in Azure



- Customer cohorts for Phase 1:

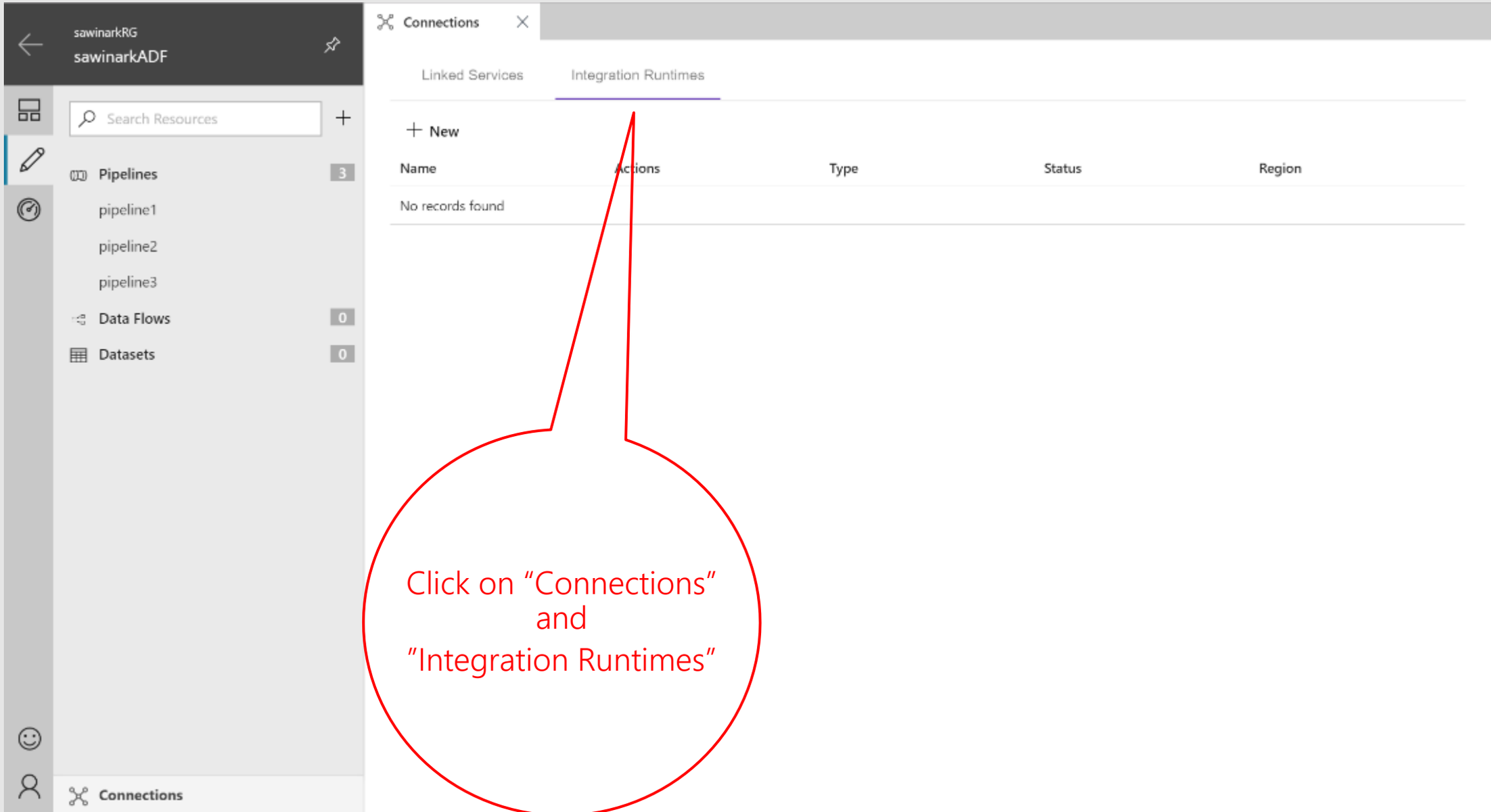
1. "SQL Migrators"

These are SSIS customers who want to retire their on-prem SQL Servers and migrate all apps + data ("complete/full lift & shift") into Azure SQL MI – For them, SSISDB can be hosted by Azure SQL MI inside VNet

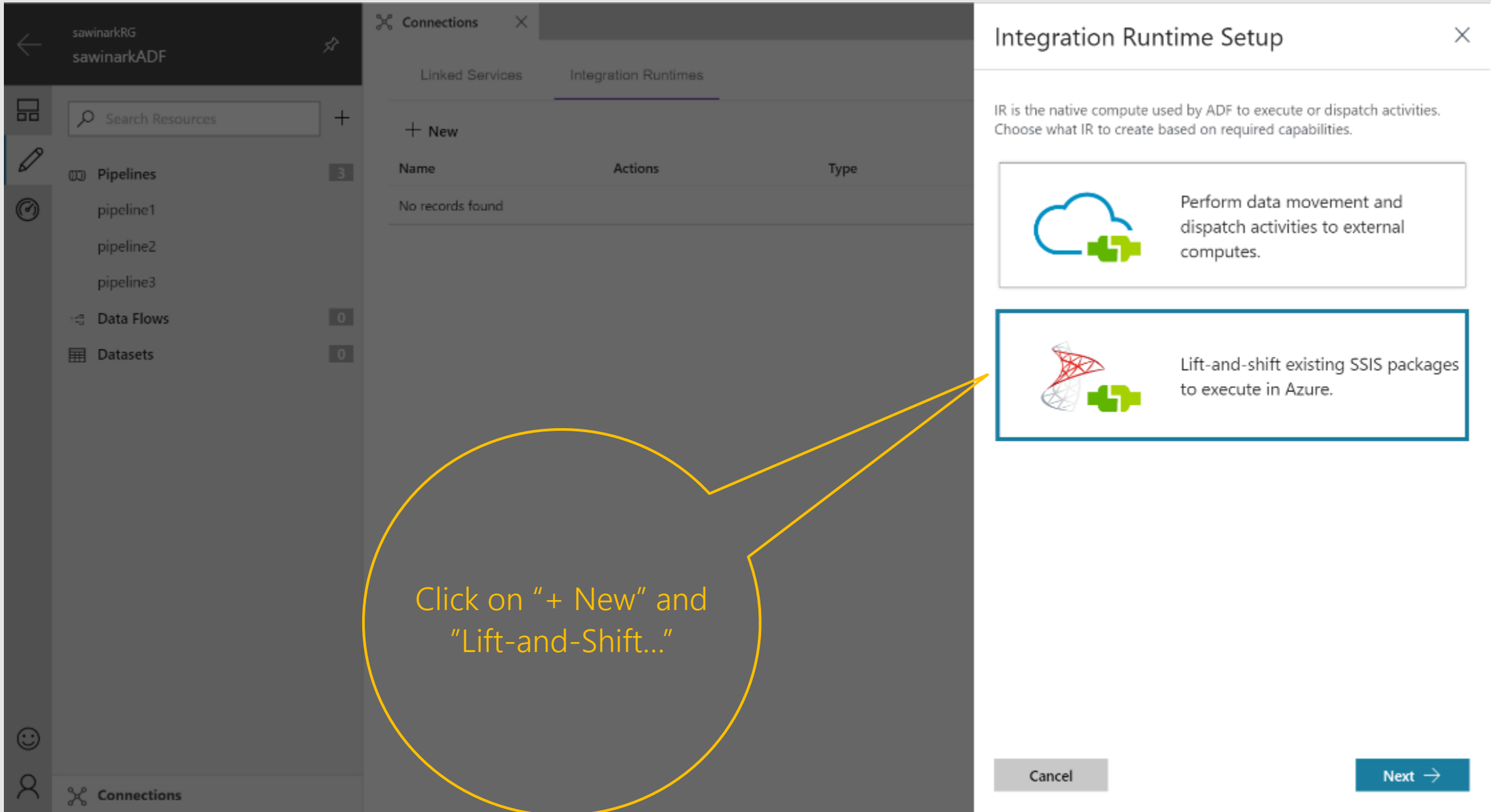
2. "ETL Cost Cutters"

These are SSIS customers who want to lower their operational costs and gain High Availability (HA)/scalability for just their ETL workloads w/o managing their own infra ("partial lift & shift") – For them, SSISDB can be hosted by Azure SQL DB in the public network

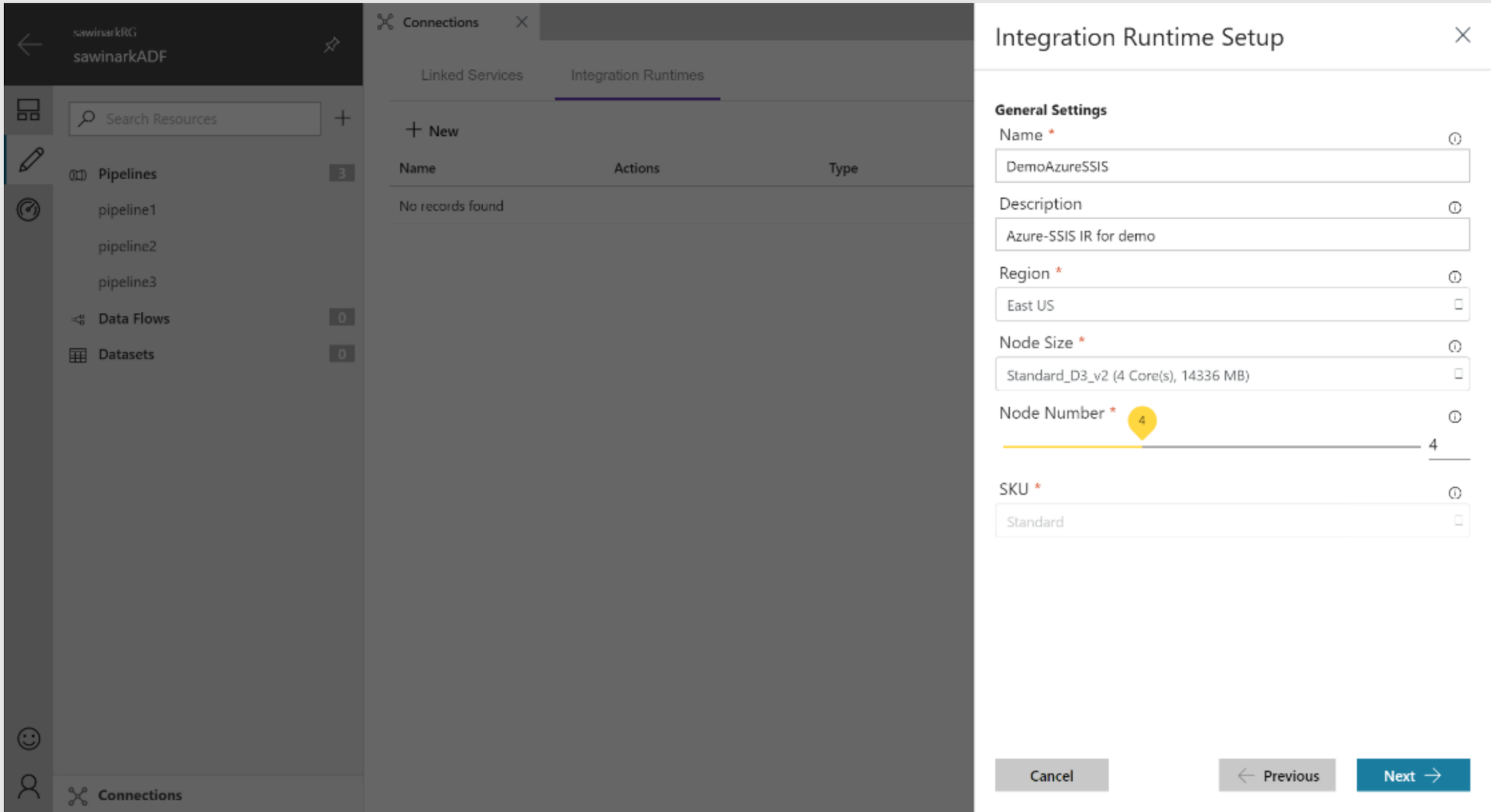
Provision SSIS IR in ADF



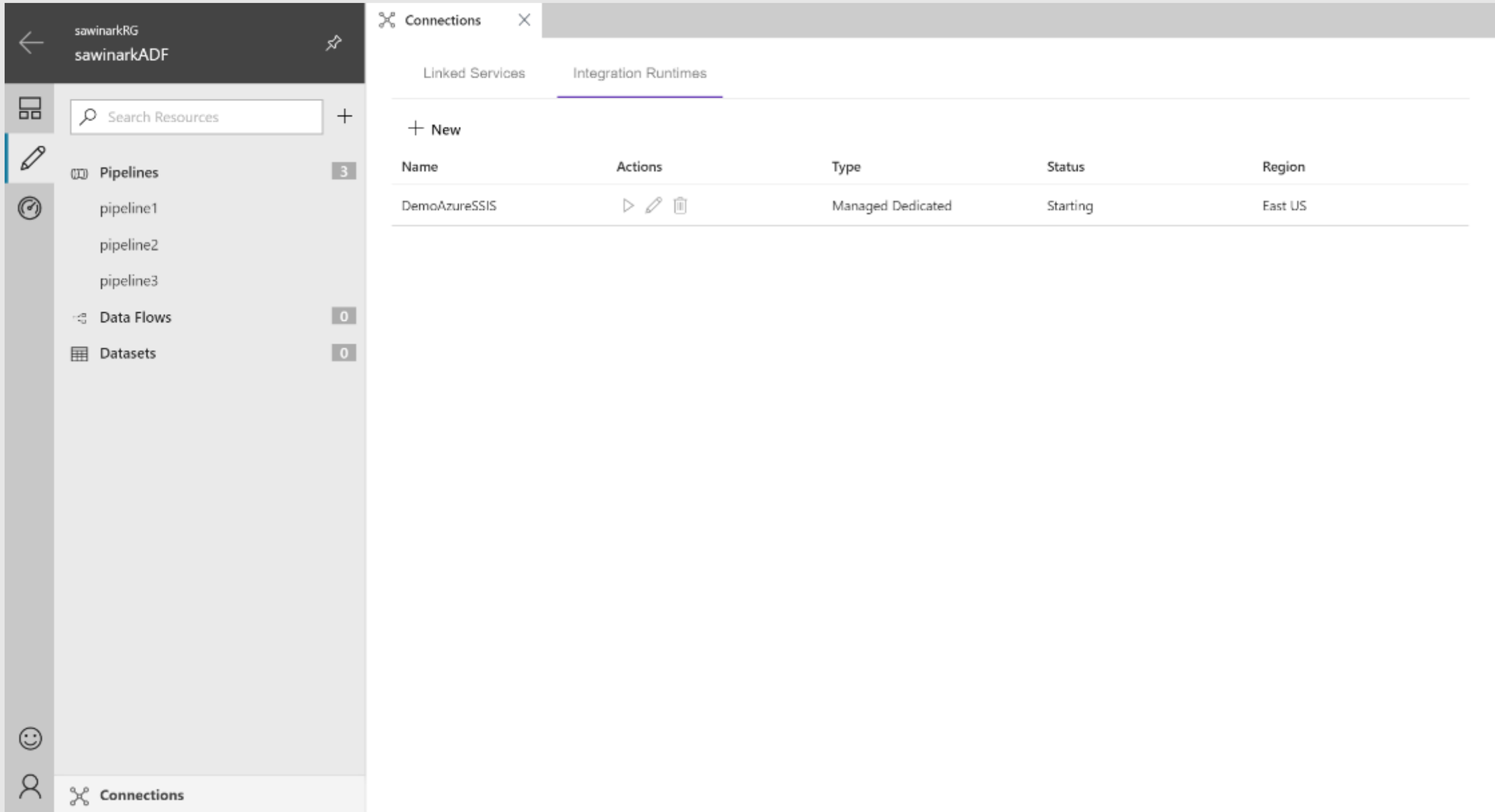
Provision SSIS IR in ADF



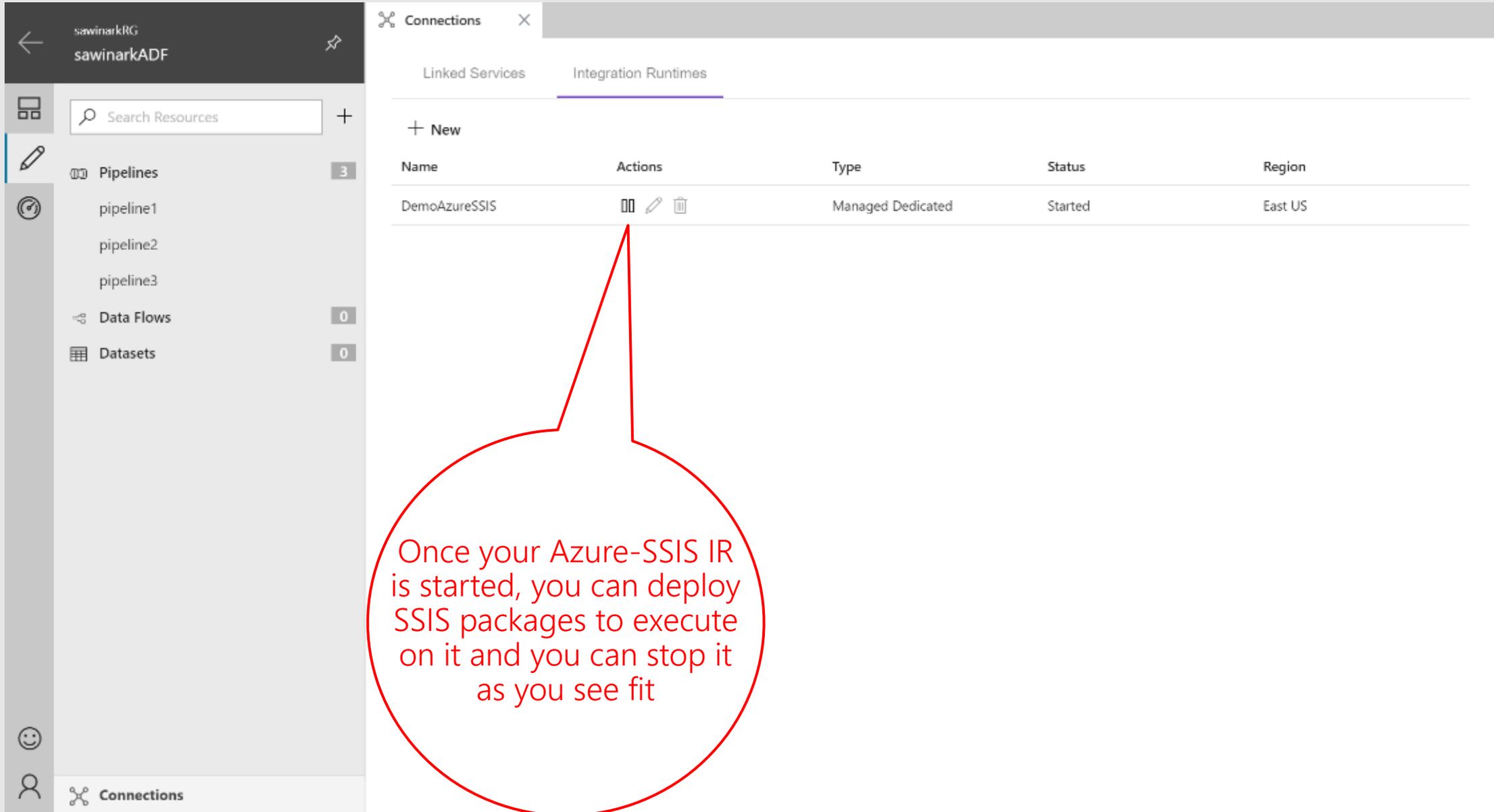
Provision SSIS IR in ADF



Provision SSIS IR in ADF



Provision SSIS IR in ADF



Provisioning via PSH

```
##### SSIS in ADFv2 specifications (please refer to SSIS in ADFv2 Public Preview documentation for field descriptions) #####
# If your inputs contain PSH special characters, e.g. "$", please precede it with the escape character "`" like "`$".
# ADFv2 info
$SubscriptionName = "[your Azure subscription name]"
$ResourceGroupName = "[your Azure resource group name]"
$DataFactoryName = "[your ADFv2 name]"
$DataFactoryLocation = "EastUS" # In Public Preview, only EastUS|EastUS2 are supported for now

# Azure-SSIS Integration Runtime info - This is ADFv2 compute resource for running SSIS packages
$AzureSSISName = "[your Azure-SSIS Integration Runtime name]"
$AzureSSISDescription = "This is my Azure-SSIS Integration Runtime"
$AzureSSISLocation = "EastUS" # In Public Preview, only EastUS|NorthEurope are supported for now
$AzureSSISNodeSize = "Standard_A4_v2" # In Public Preview, only
Standard_A4_v2|Standard_A8_v2|Standard_D1_v2|Standard_D2_v2|Standard_D3_v2|Standard_D4_v2 are supported for now
$AzureSSISNodeNumber = 2 # In Public Preview, only 1-10 nodes are supported for now
$AzureSSISMaxParallelExecutionsPerNode = 2 # In Public Preview, only 1-8 parallel executions per node are supported for now
$VnetId = "[your VNet resource ID or leave it empty]" # OPTIONAL: In Public Preview, only Classic VNet is supported for now
$SubnetName = "[your subnet name or leave it empty]" # OPTIONAL: In Public Preview, only Classic VNet is supported for now

# SSISDB info
$SSISDBServerEndpoint = "[your Azure SQL Database server name.database.windows.net or your Azure SQL Managed Instance server endpoint]"
$SSISDBServerAdminUserName = "[your server admin username]"
$SSISDBServerAdminPassword = "[your server admin password]"
$SSISDBPricingTier = "[your Azure SQL Database pricing tier, e.g. S3, or leave it empty for Azure SQL Managed Instance]" # Not applicable for
Azure SQL Managed Instance
##### End of SSIS in ADFv2 specifications #####
```

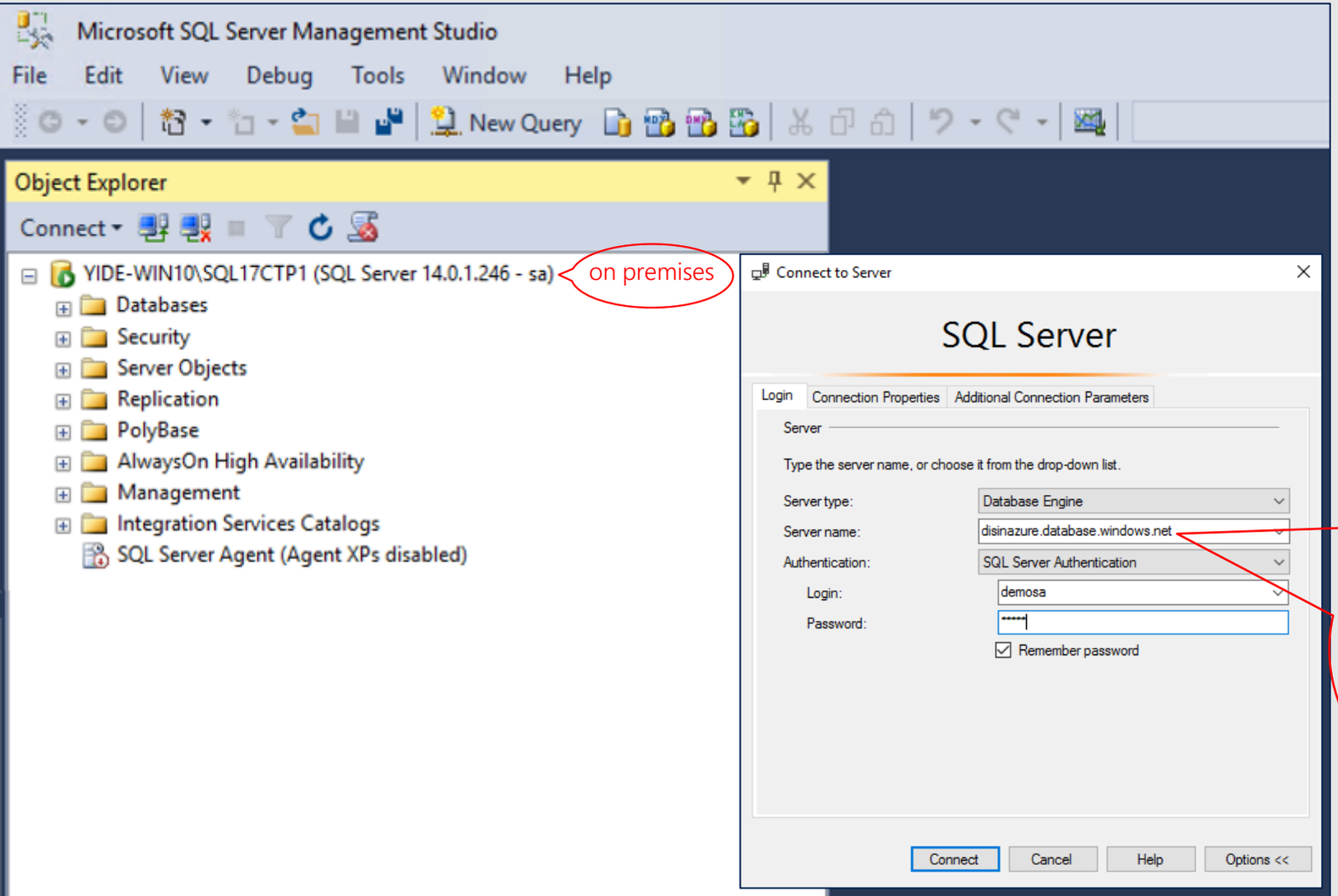
Deployment Methods

- SSIS PaaS supports the project deployment model used in SSIS 2012/later versions
  - Projects built in the legacy package deployment model used in SSIS 2008/earlier versions can be converted into this model via SSDT/SSMS using Integration Services Project Conversion Wizard
  - Packages built in SSIS 2008/earlier versions can be upgraded to the latest version supported by SSIS PaaS via SSDT/SSMS using SSIS Package Upgrade Wizard
  - In this model, the whole project needs to be deployed after any package changes – An incremental package deployment feature will be provided in the near future
  - Projects containing environment references/run-time parameters can be saved into project deployment files (.ispac extension)
  - Projects are deployed into SSISDB hosted by Azure SQL DB/MI server, packages are run by creating/starting jobs via SSISDB sprocs that will be executed on Azure-SSIS IR, and execution logs are written back into SSISDB

Deployment Methods

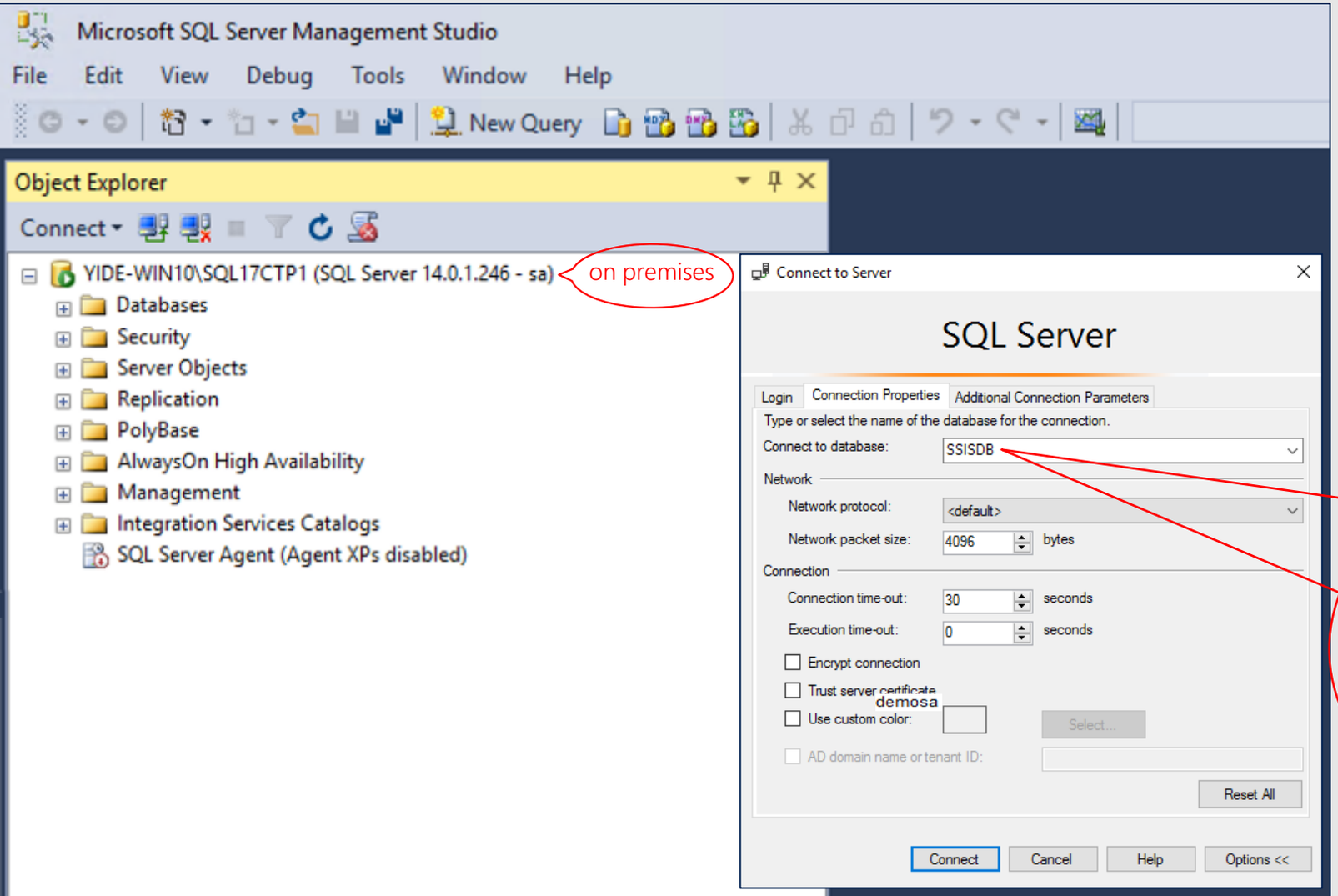
- SSIS projects can be deployed via SSDT/SSMS using Integration Services Deployment Wizard
- SSIS projects can be deployed via Command Line Interface (CLI)
  - Run isdeploymentwizard.exe from the command prompt (TBD)
- SSIS projects can be deployed via custom code/PSH using SSIS Managed Object Model (MOM) .NET SDK/API
  - Microsoft.SqlServer.Management.IntegrationServices.dll is installed in .NET Global Assembly Cache (GAC) with SQL Server/SSMS installation
- SSIS projects can be deployed via T-SQL scripts executing SSISDB sprocs
  - Execute SSISDB sproc [catalog].[deploy_project]

Deployment via SSMS



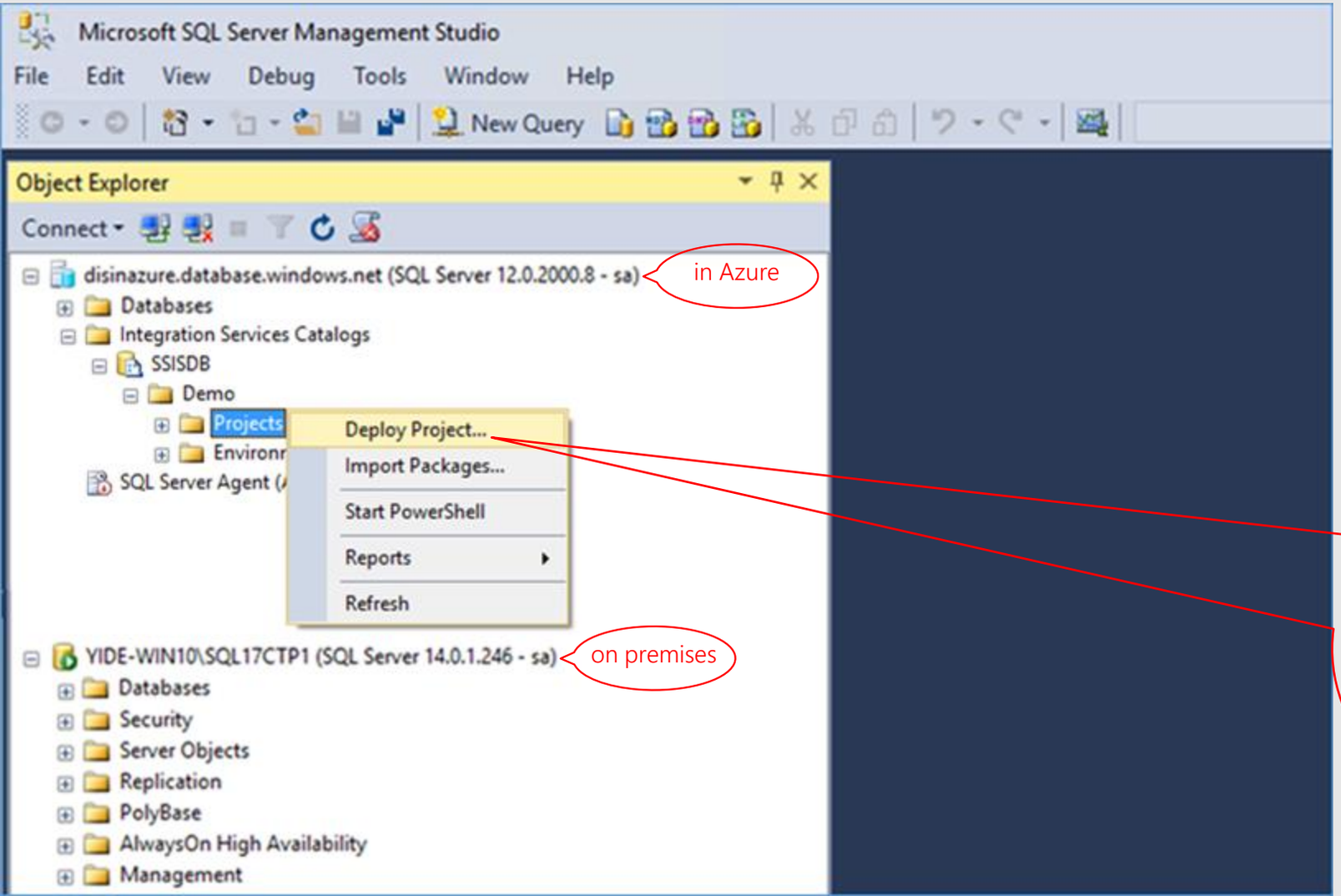
On SSMS, you can connect to SSIS PaaS using its connection info and SQL/AAD authentication credentials

Deployment via SSMS



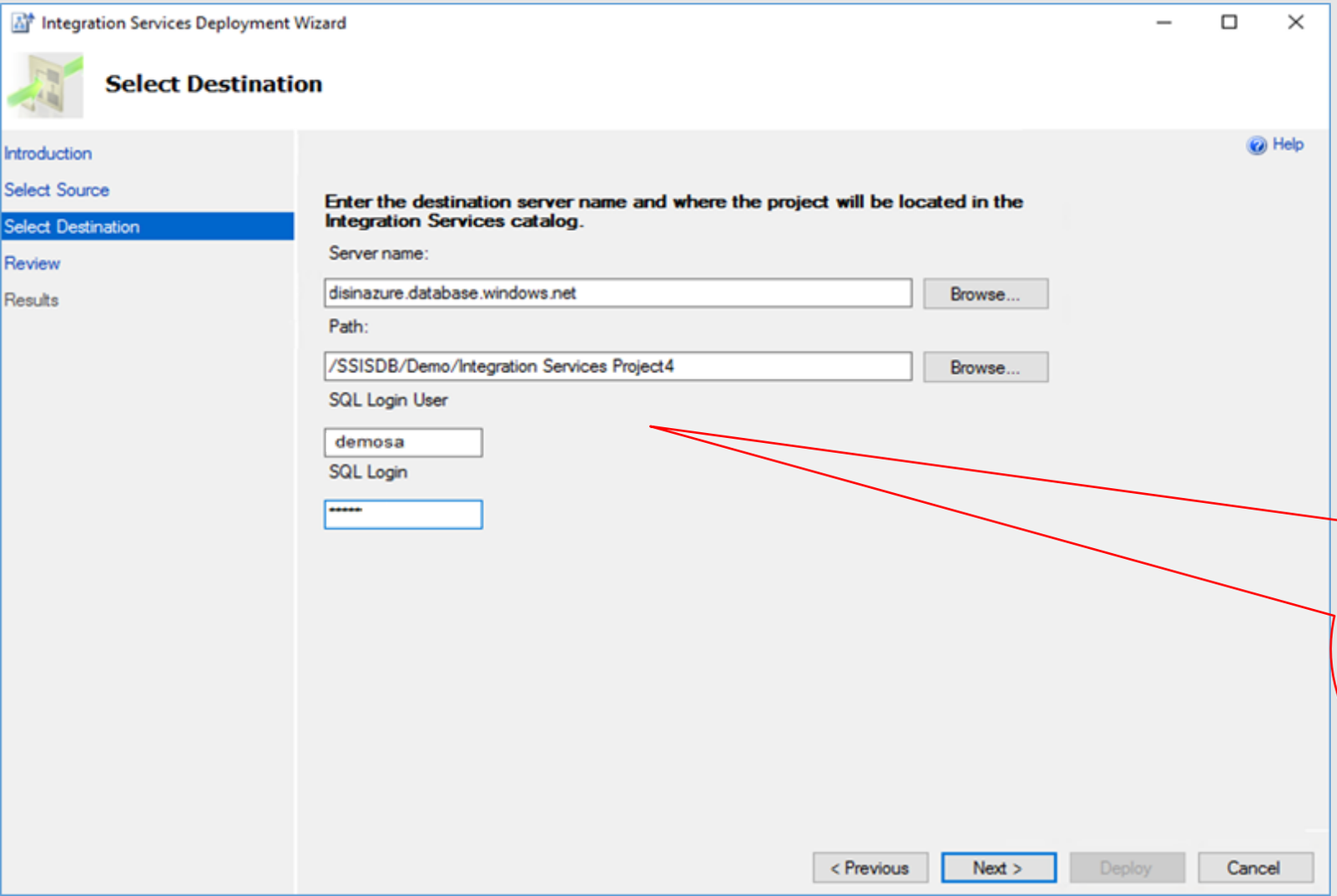
On “Connection Properties” tab, enter “SSISDB” as the target database to connect

Deployment via SSMS



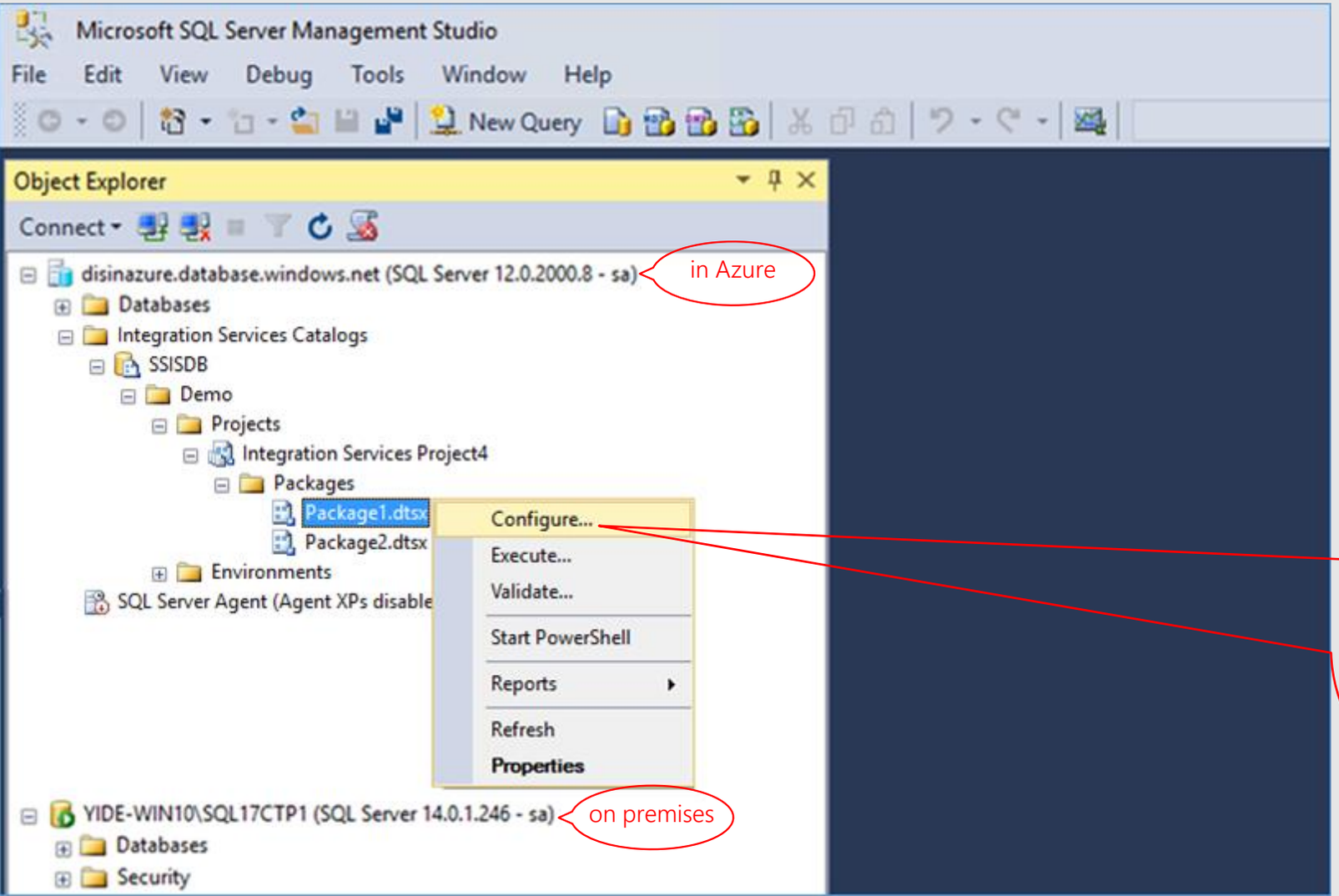
Once connected, you can deploy projects/packages to SSIS PaaS from your local file system/SSIS on premises

Deployment via SSMS



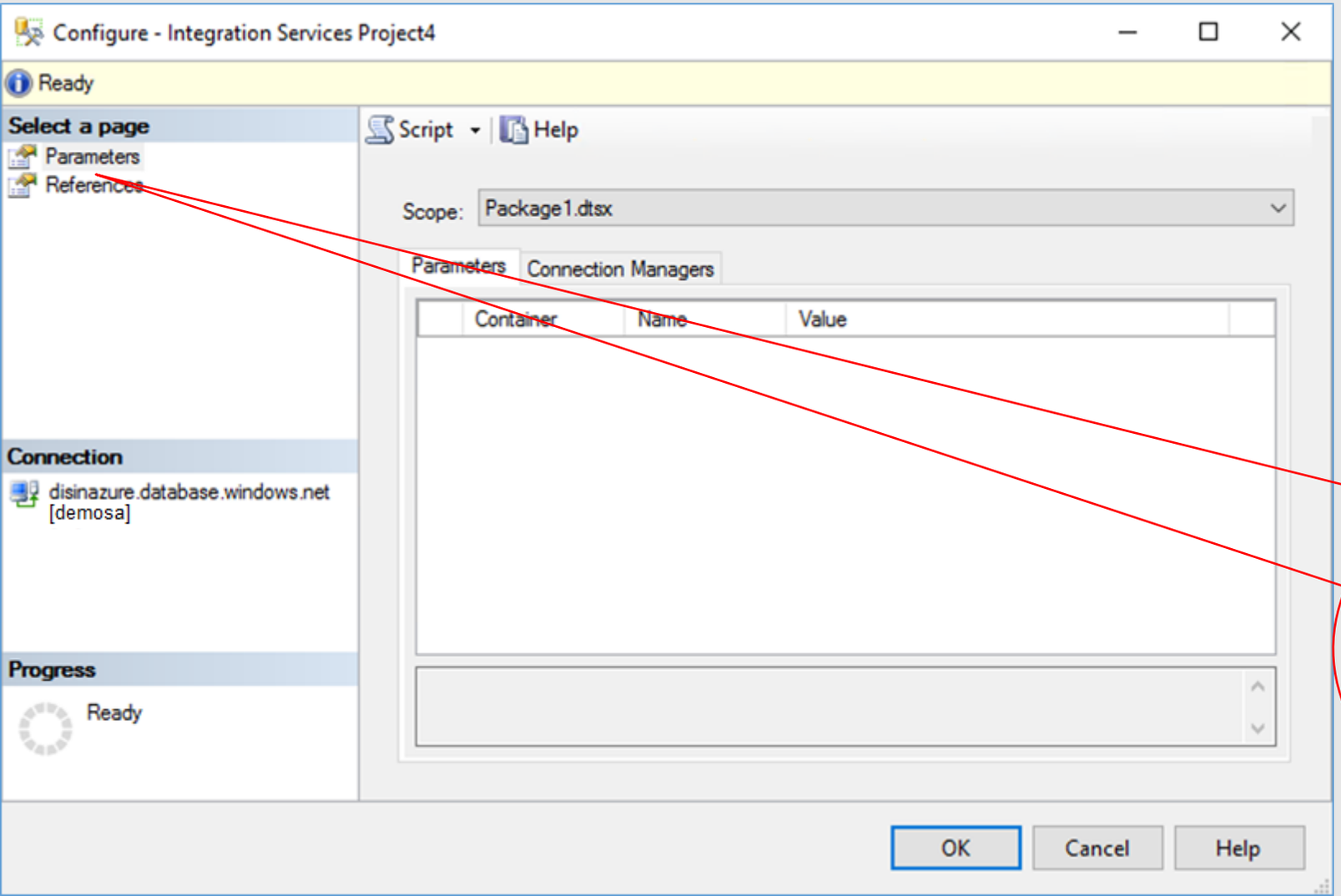
On Integration Services Deployment Wizard, enter SSIS PaaS connection info and SQL authentication credentials

Execution via SSMS



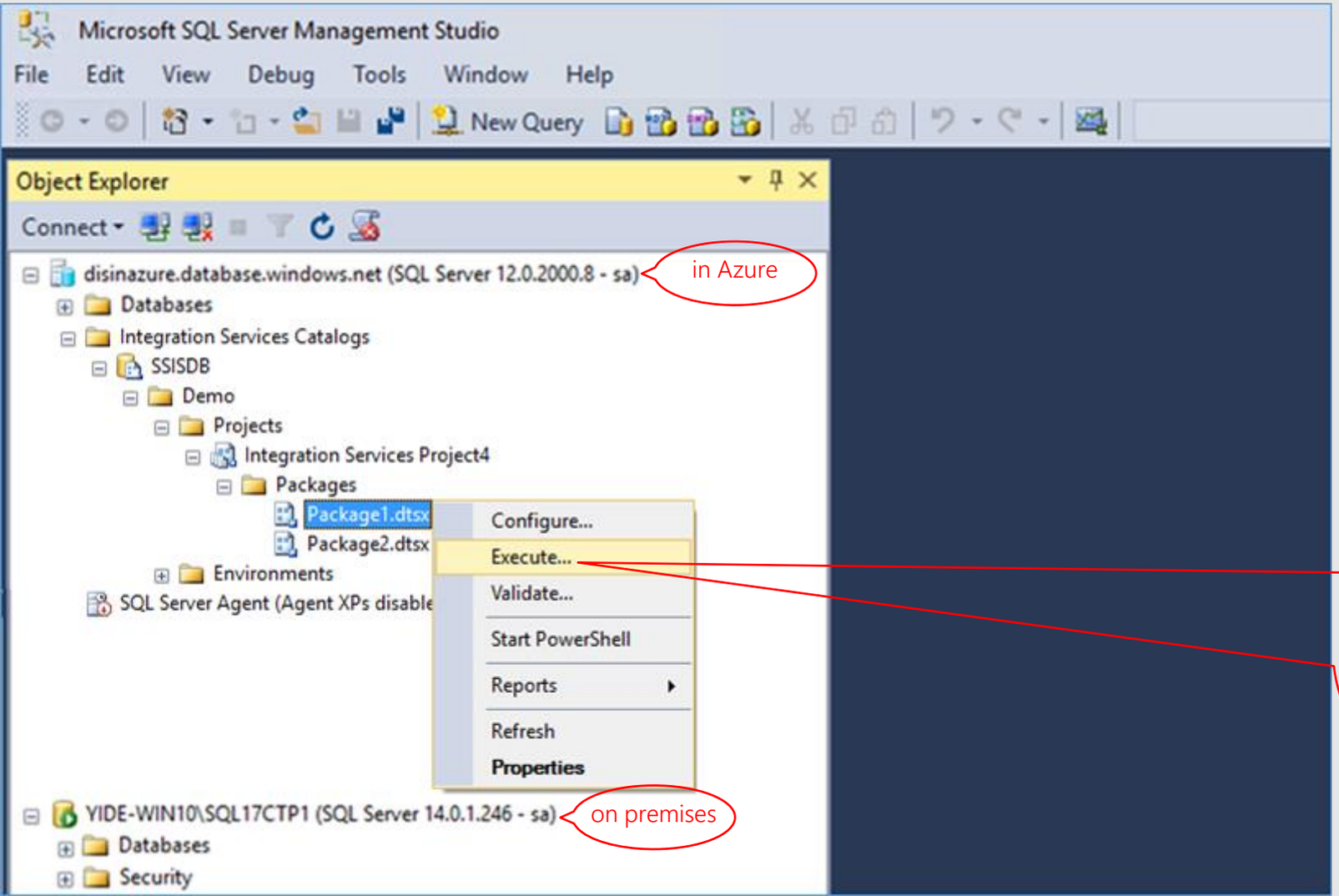
Once deployed, you can configure packages for execution on SSIS PaaS

Execution via SSMS



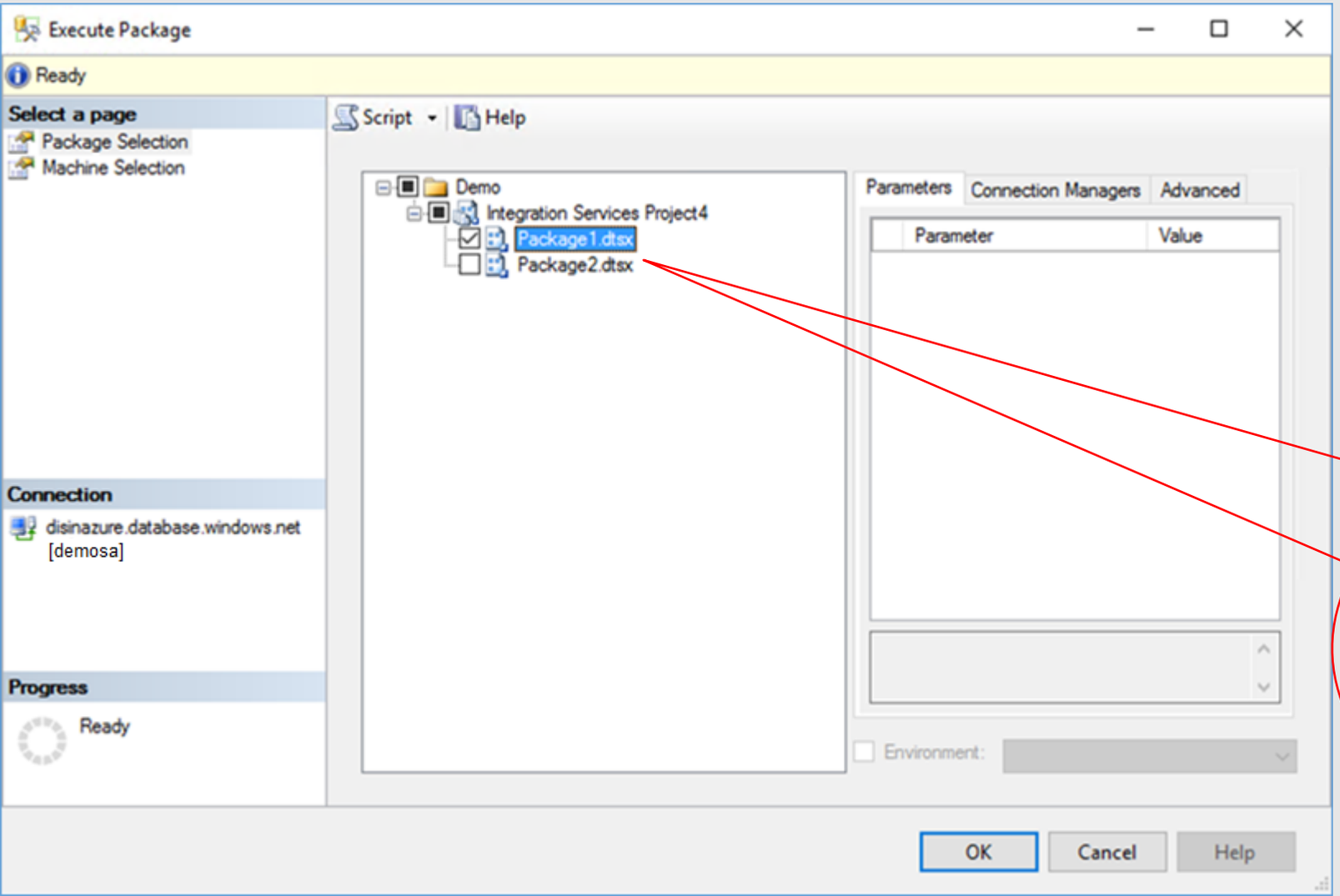
You can set package run-time parameters/environment references

Execution via SSMS



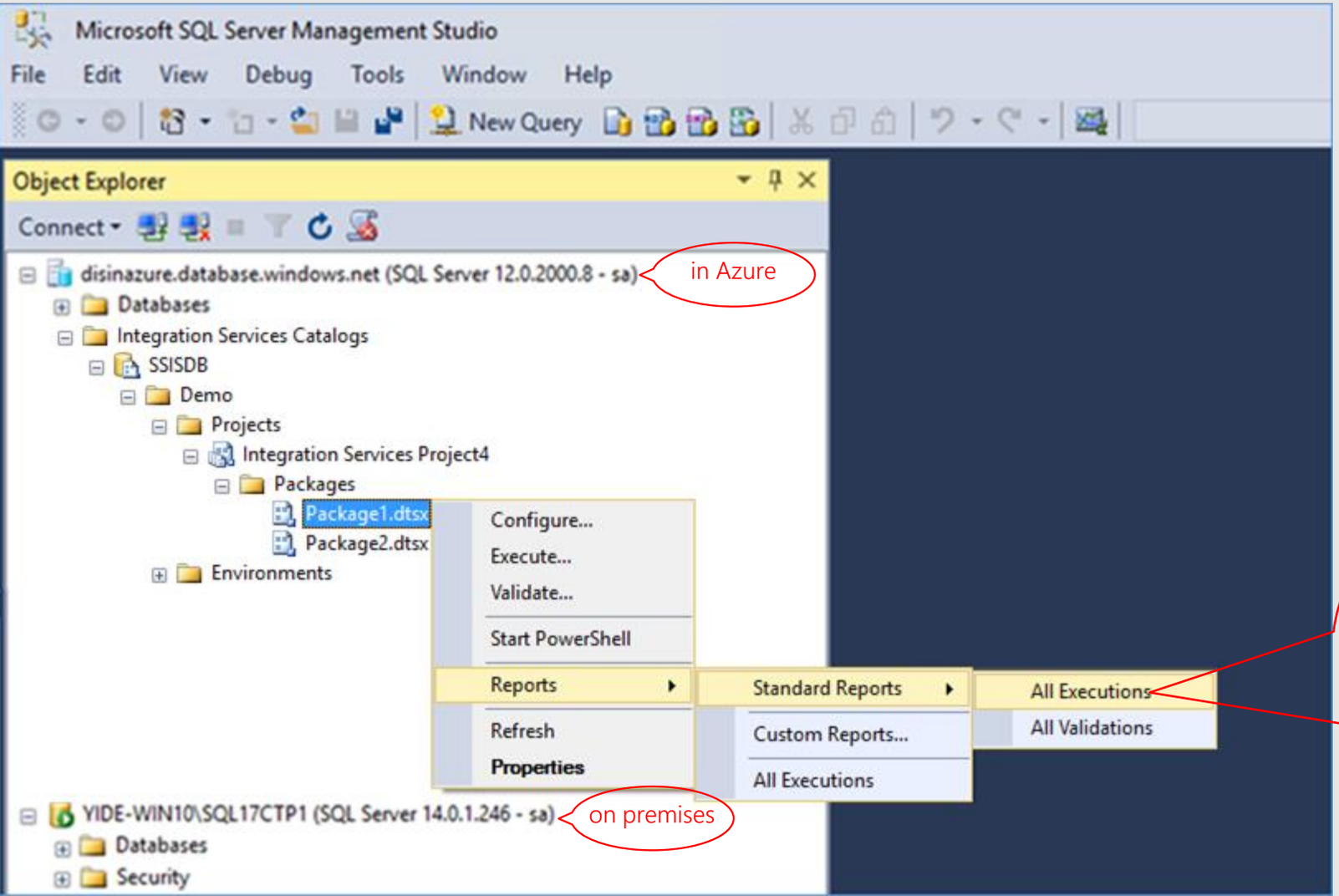
Once configured, you can execute packages on SSIS PaaS

Execution via SSMS



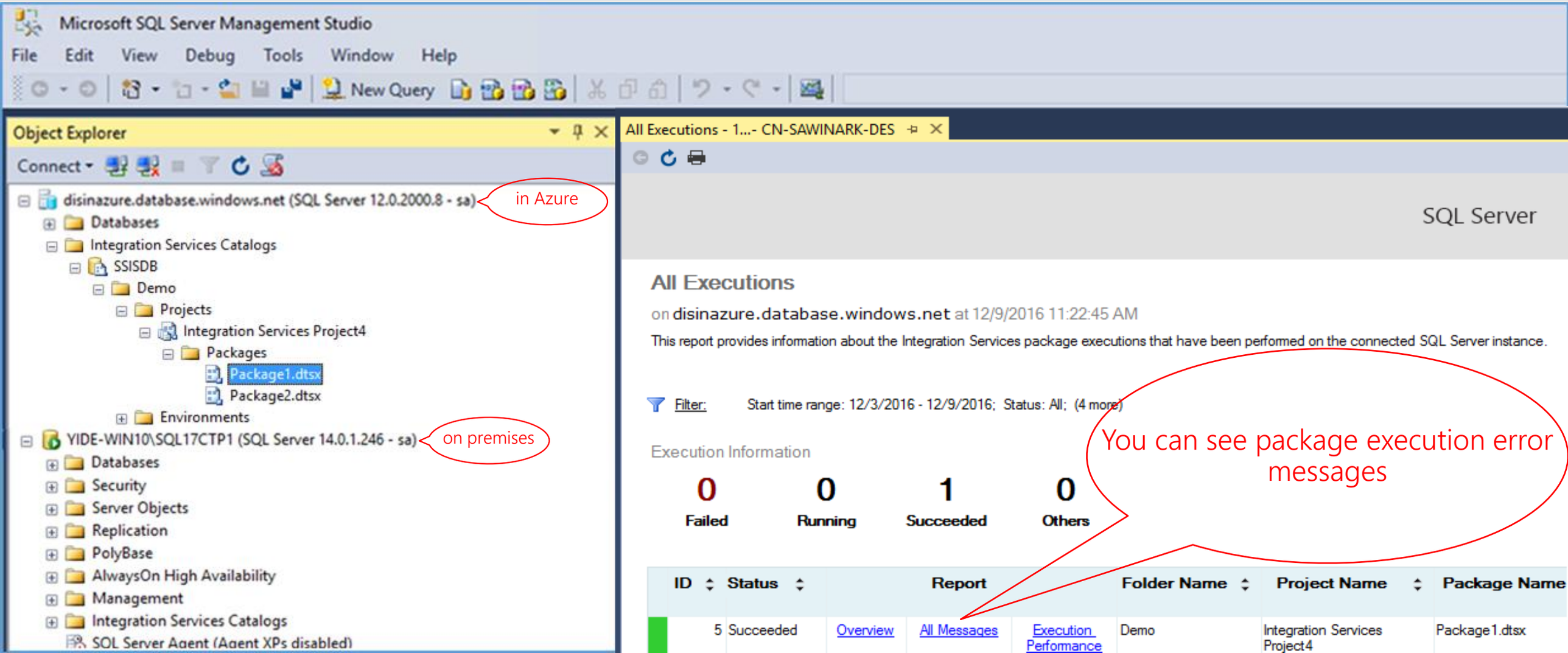
You can select some packages to execute on SSIS PaaS

Monitoring via SSMS

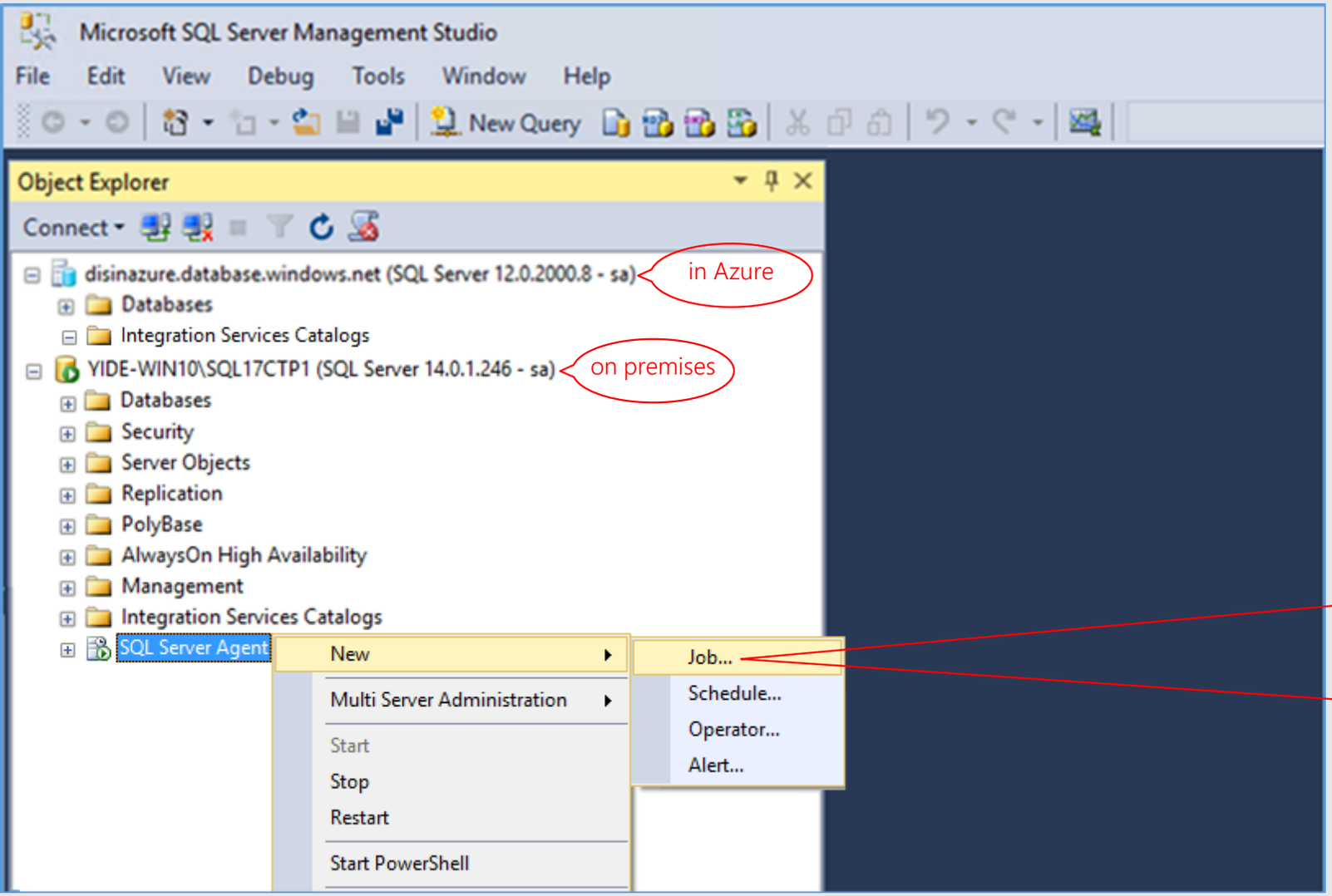


You can see reports of all package executions on SSIS PaaS

Monitoring via SSMS

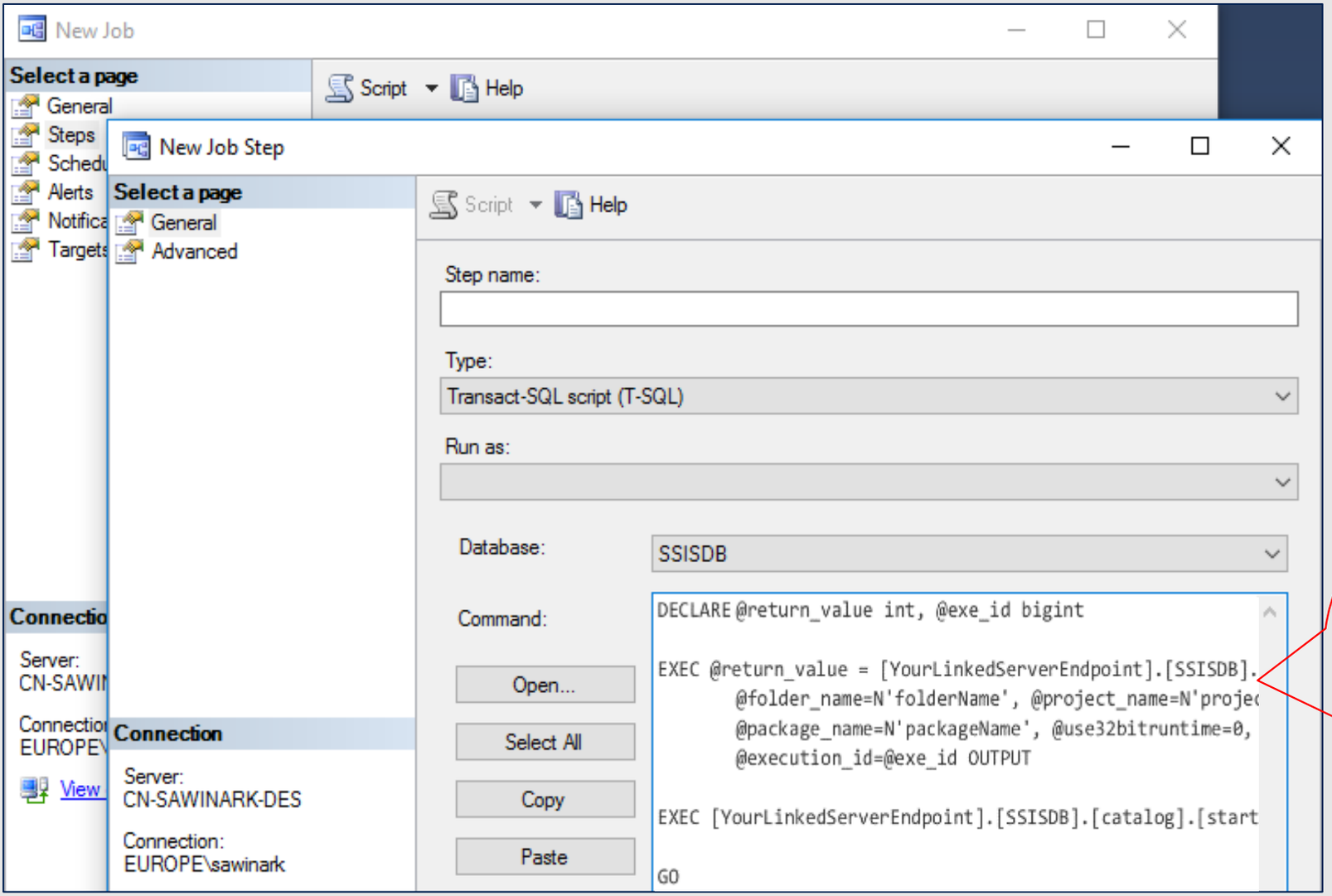


Scheduling via On-Prem SQL Server Agent



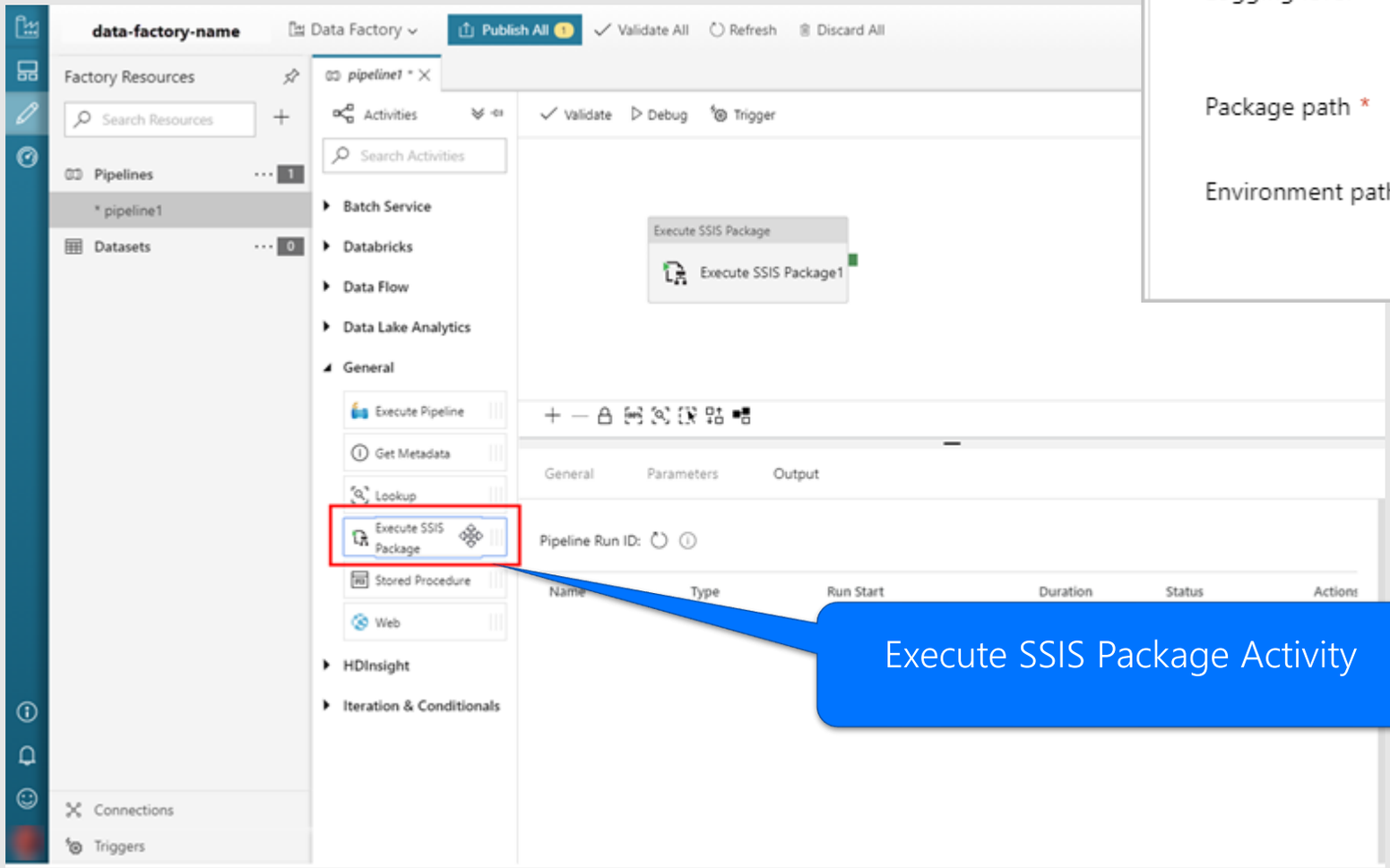
You can schedule T-SQL jobs to execute packages on SSIS PaaS via on-prem SQL Server Agent

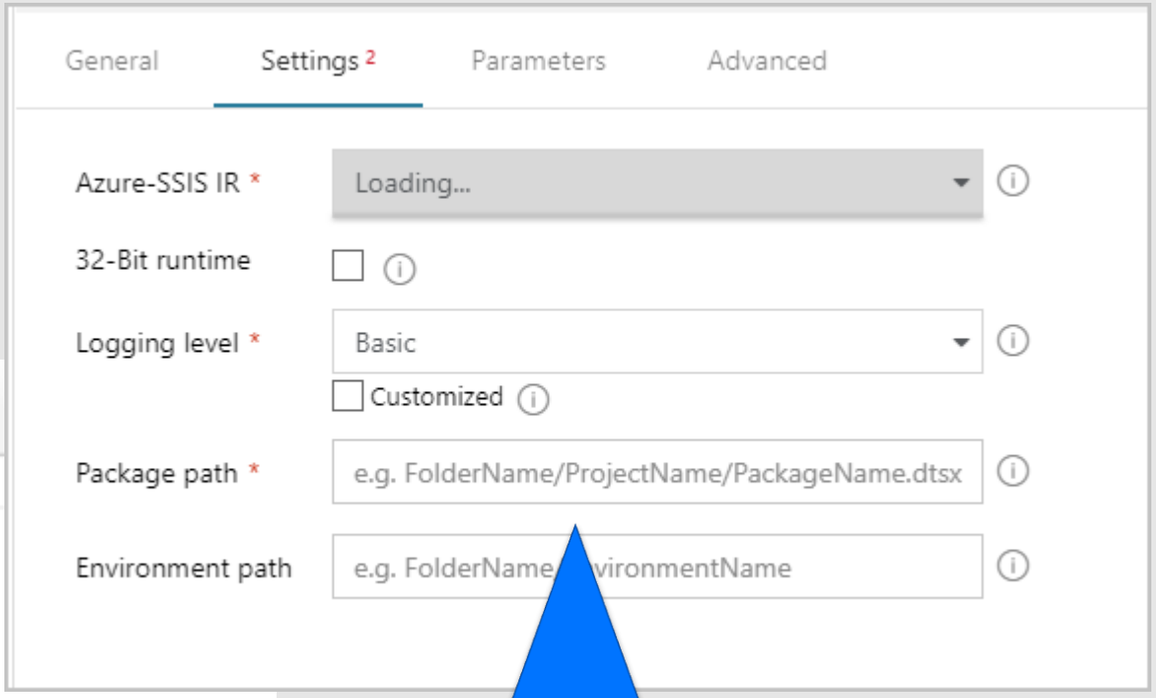
Scheduling via On-Prem SQL Server Agent



T-SQL jobs can execute SSISDB sprocs in Azure SQL DB/MI server that has been added as a linked server to on-prem SQL Server

Execution via ADF

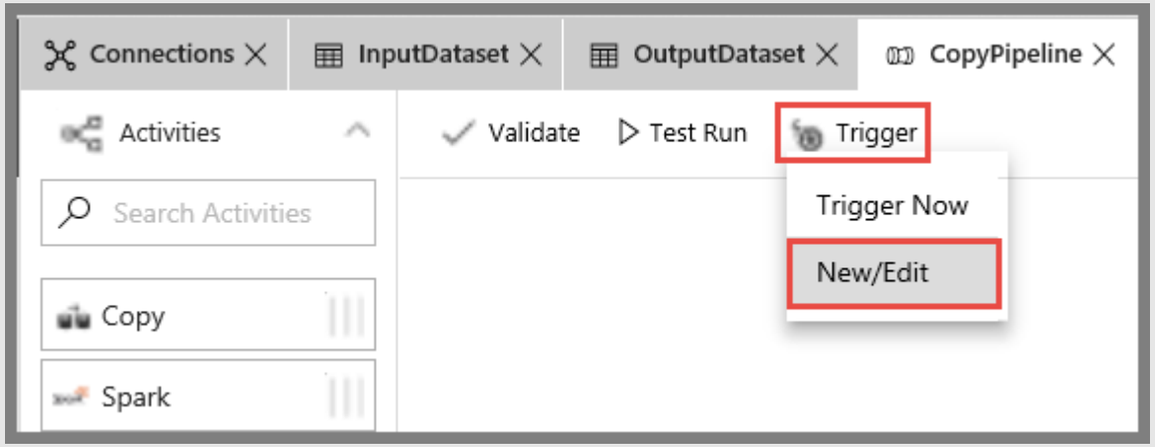


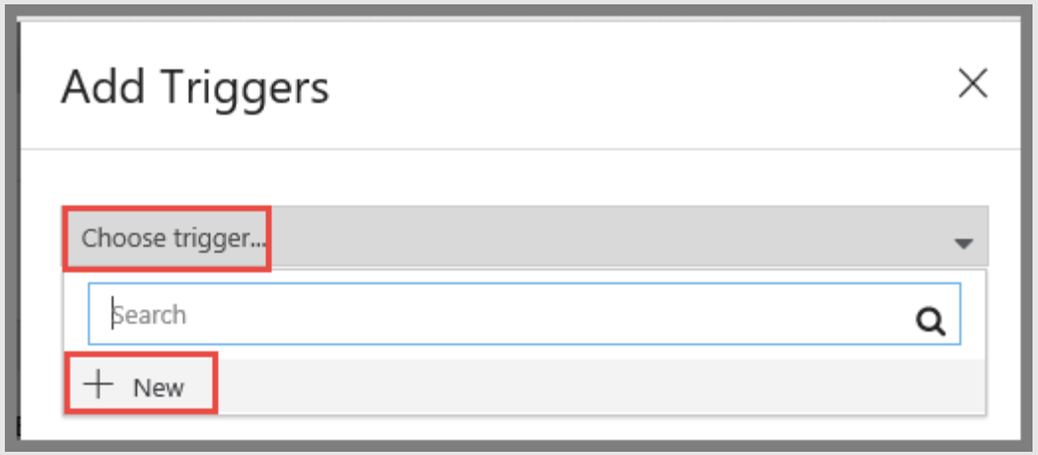


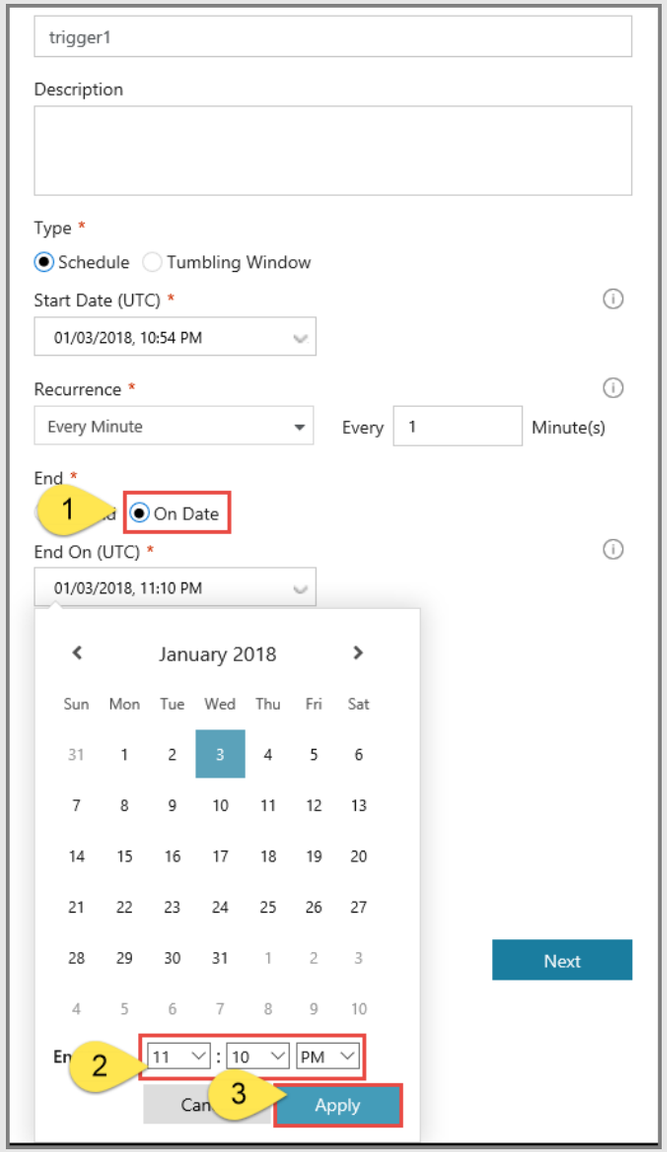
Execute SSIS Package Activity

Execute SSIS package from SSISDB hosted in the Cloud and choose environments for parameters

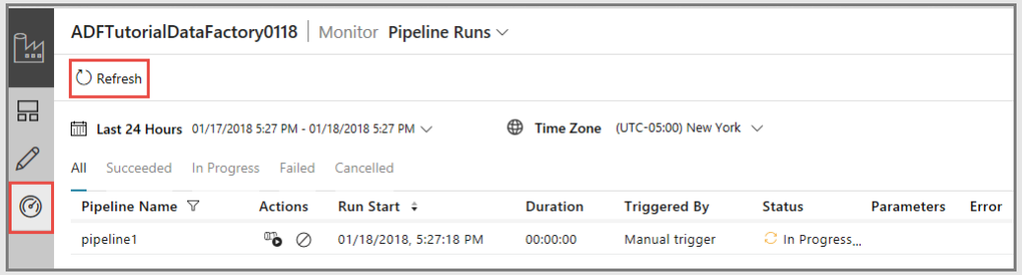
Scheduling via ADF Wall-Clock Triggers

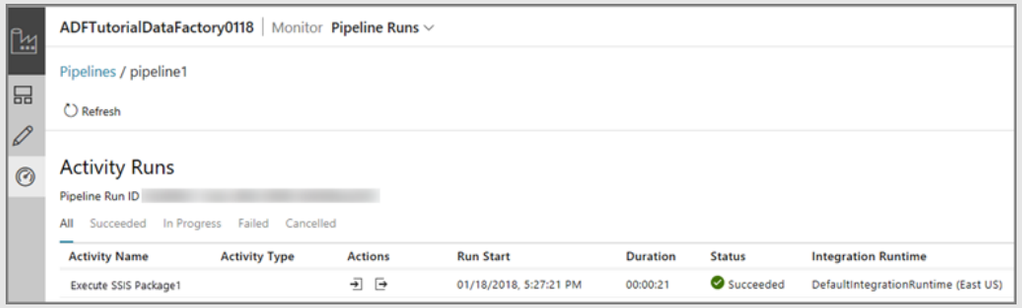


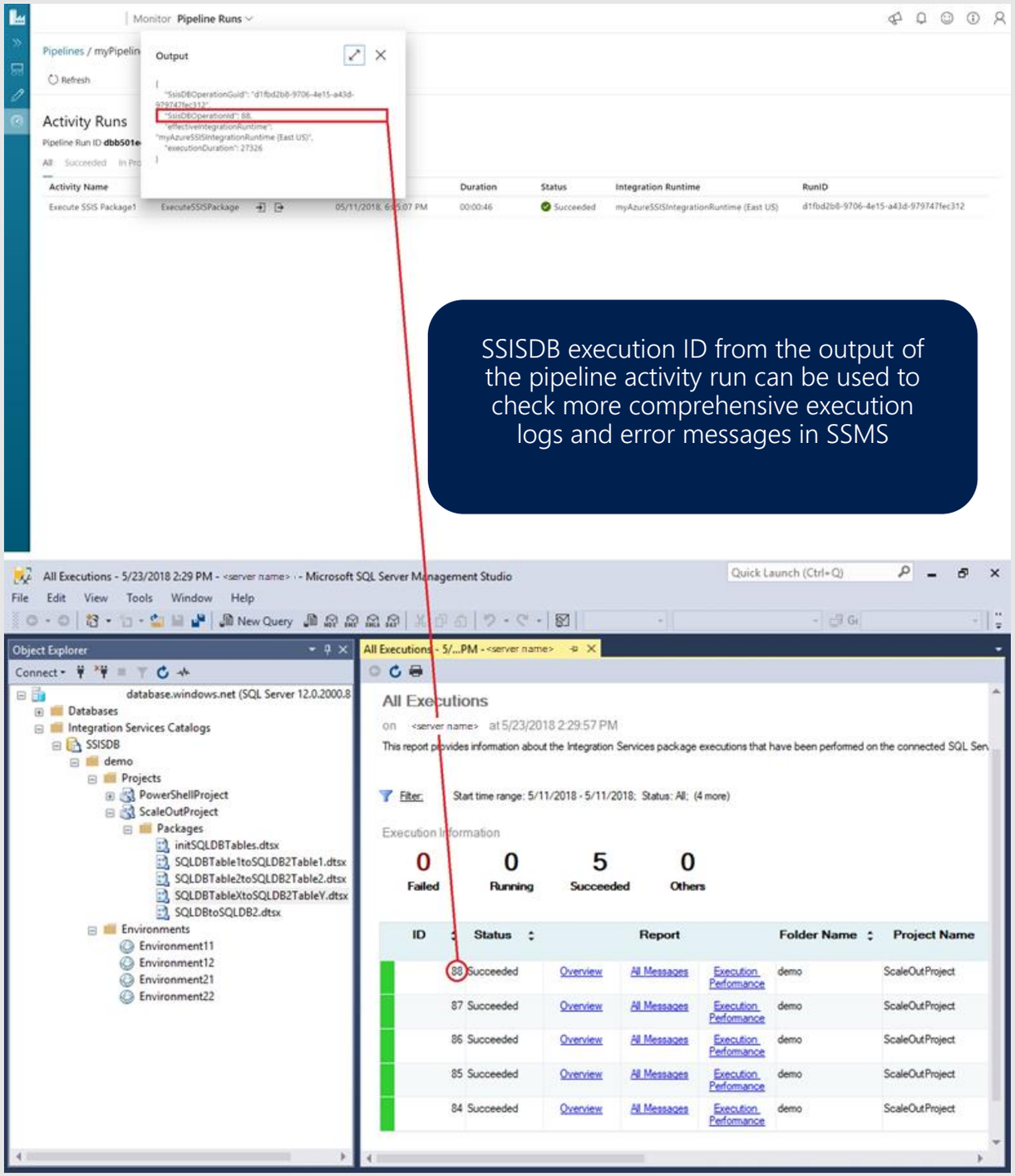




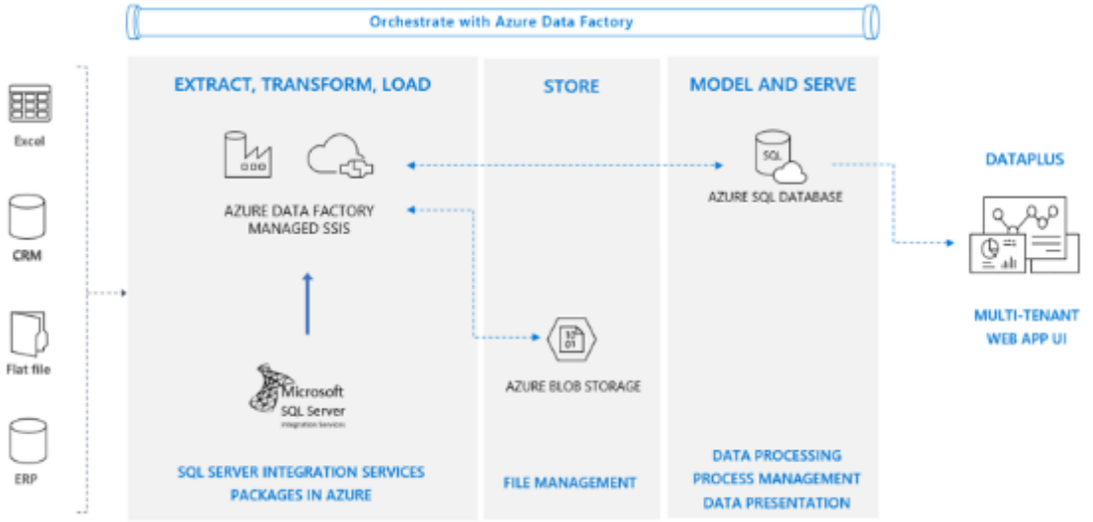
Monitoring via ADF







Automatic Data warehouse generating firm cuts development time by a third



- Time to production – 3 weeks
- 100 GB data moved weekly
- Saved 3 months of development effort by moving to cloud

Challenge

Most of Concentra customers were challenged by disparate data sources from hybrid and multi-cloud environments. As the customers varied in size, it was difficult to maintain scale without adding infrastructure.

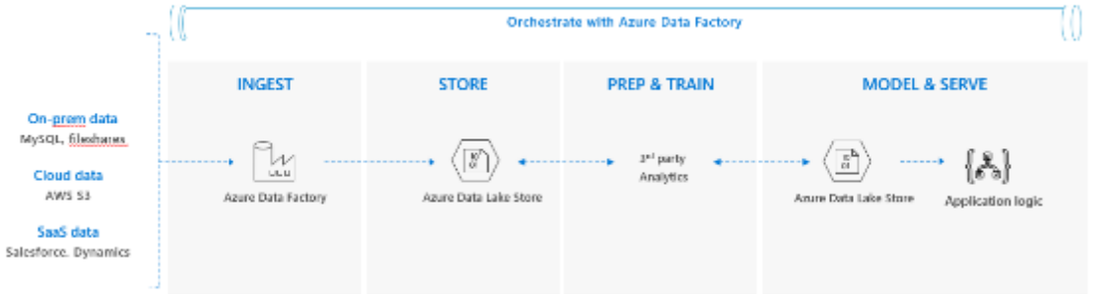
As the firm's data warehouse practice grew, maintenance of existing data warehouses increasingly required process updates to accommodate changes to data feeds, especially those of healthcare and government customers.

Solution

Build Software-as-a-service on Azure to automate data-driven workflows with SQL Server Integration Services in Azure Data Factory, creating an easy-to-use, cloud-based version of their data warehouse generator.

Customers can redeploy their existing SSIS packages from on premises environments to Azure with minimal modification in managed SSIS environment in Azure Data Factory.

Adobe uses global cloud to create, deliver, and manage better digital experiences



Challenge

Developers building out the next generation of consumer experiences need a semantic platform with curated data, APIs and machine learning services on top, designed explicitly for that purpose.

Bringing massive volume of behavioral and experience data across on-premises, cloud and SaaS applications that needs to be ingested at scale, prepared and transformed into experience data models.

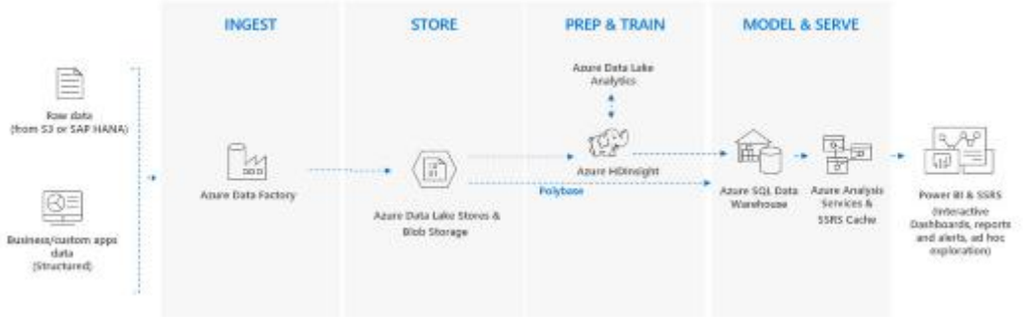
Solution

With Azure Data Factory, Adobe can connect to hybrid data sources and ingest data at scale into the lake powering the Adobe cloud platform.

Data may consist of CRM data, e-commerce transactions, offline transactions, loyalty program data, behavioral data from mobile, web or emails, and social interaction data.

- 2M activity runs per month
- 10 TB data moved per month
- Time to production – 6 months
- Expedited go to market by 6 months
- Pulling data from Salesforce, Dynamics, AWS S3, MySQL and FileShare

HEALTH • HYGIENE • HOME



Consumer goods firm empowers employees to work smarter using big data

Challenge

Data. To make good decisions, salespeople, marketers, product developers, and executives all need data to understand what's going on with the business and the team realized that to gain those kinds of crystal-ball insights, RB needed more than just internal operational data, they needed third-party data.

Need to do a better job of helping employees make sense of proliferating data.

- 7.1 TB data moved weekly
- 4.7K activity runs per week
- Time to production – 2.5 months

Solution

Use Microsoft Azure to build a modern data warehouse solution to replace AWS data warehouse and Hadoop components and save money in the process.

Bring together a variety of data from different sources using Azure Data Factory in Azure HDInsight and Azure SQL Data Warehouse and make it easily accessible in one view across the organization.

Improved Health Outcomes by integrating healthcare data

Challenge

Integration of Healthcare data from multiple hospitals and heterogenous sources

Transformation and orchestration of dataflow at scale

Increasing costs of scaling on-premise data pipelines

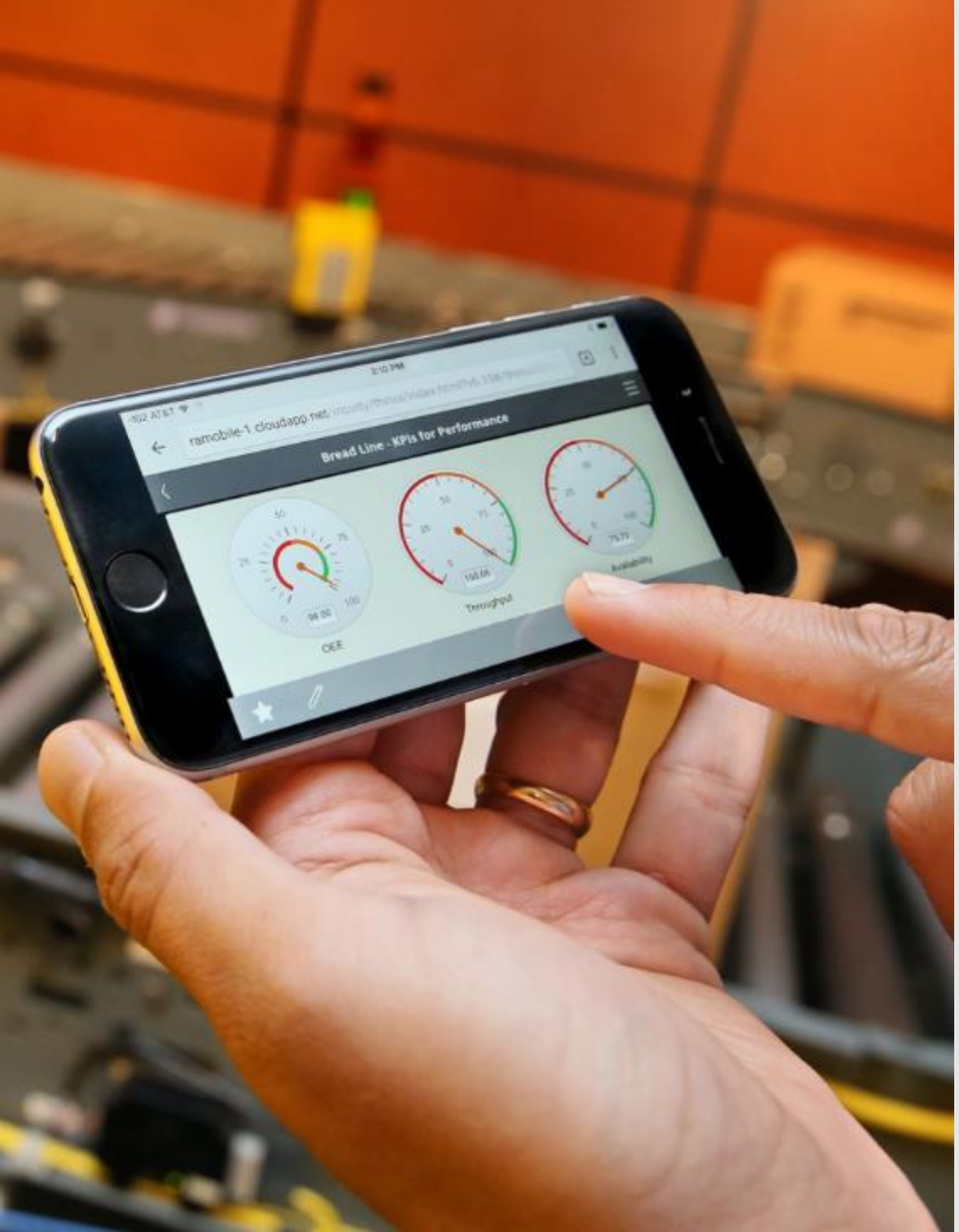
Solution

Built end-to-end data integration with Azure Data Factory, leveraging big data and compute offerings in Azure

Enabled data ingestion from hybrid sources of data

Orchestrated complex data workflows at scale

LUMEDX



Industrial automation firm cuts up to 90 percent of costs

Challenge

Manage data in excess of the existing data warehouse and systems capacity

Integrate data on-premises with cloud and batch processing with live streaming

Monitor a complex supply chain – undersea wells, refining facilities, gas stations

Solution

Integrated complex data systems with Azure Data Factory

Composed, orchestrated, and managed highly available data pipelines

Reduced up to 90 percent of costs

Rockwell Automation

Actuarial firm unlocks the potential of human capital to drive business

Challenge

Increasing complexity of insurance products and regulations

Diversion from firm's core purpose

Rise in on-premises hardware investments to handle high-performance grid computing

Solution

Built software-as-a-service on Azure to address modeling and reporting of large, compute-intensive workloads and used Azure Data Factory to automate extract, transform, and load (ETL) processes

Gained real-time insight into financial data

Milliman

INTEGRATE