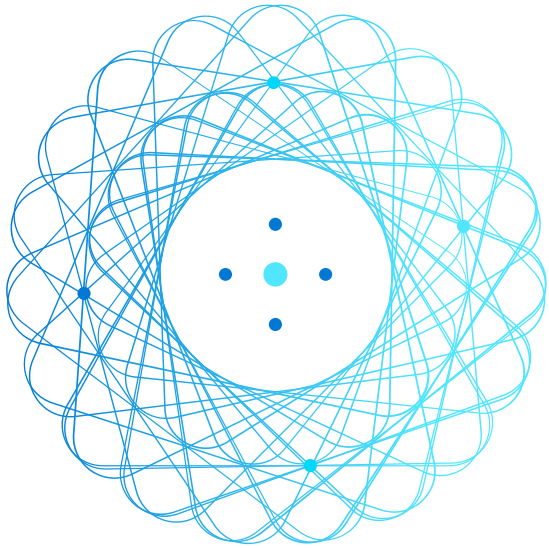
Microsoft Azure

Introduction to Azure Machine Learning (No-Code)



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- Microsoft Certified Azure AI Engineer Associate
- Microsoft Certified Azure AI Fundamentals

- Microsoft Certified Azure Fundamentals

- Microsoft Certified Power Platform Fundamentals

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Introduction to Azure Machine Learning

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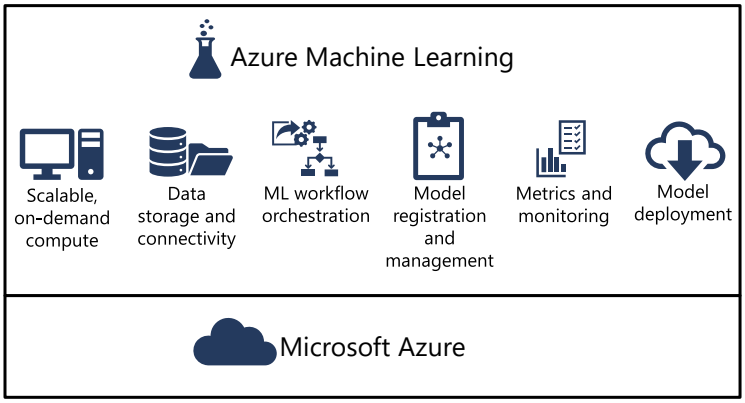
What is Azure Machine Learning?

A platform for operating machine learning workloads in the cloud



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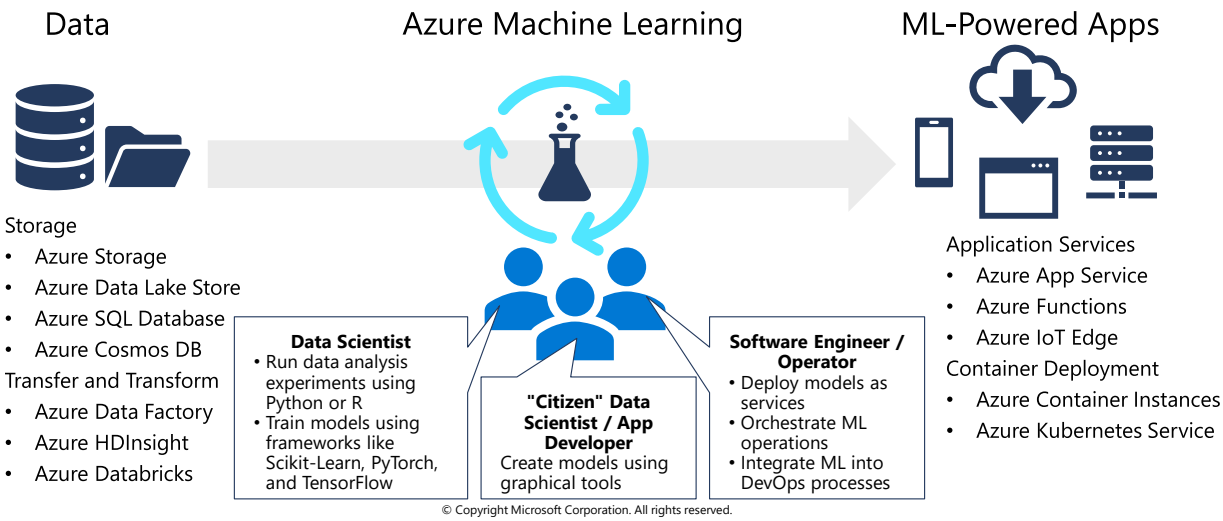
Azure Machine Learning in Context



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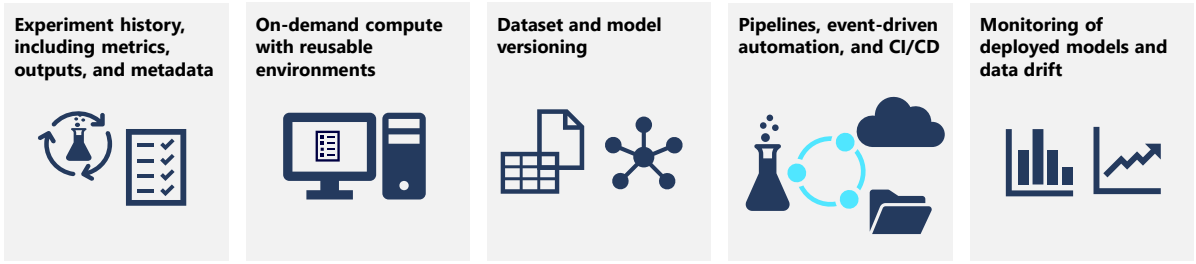
Machine Learning Operationalization (ML Ops)

Based on *DevOps* principles, including:

- Infrastructure-as-code and configuration management
- Version control and tracking
- Continuous integration and delivery (CI/CD)
- Continuous monitoring



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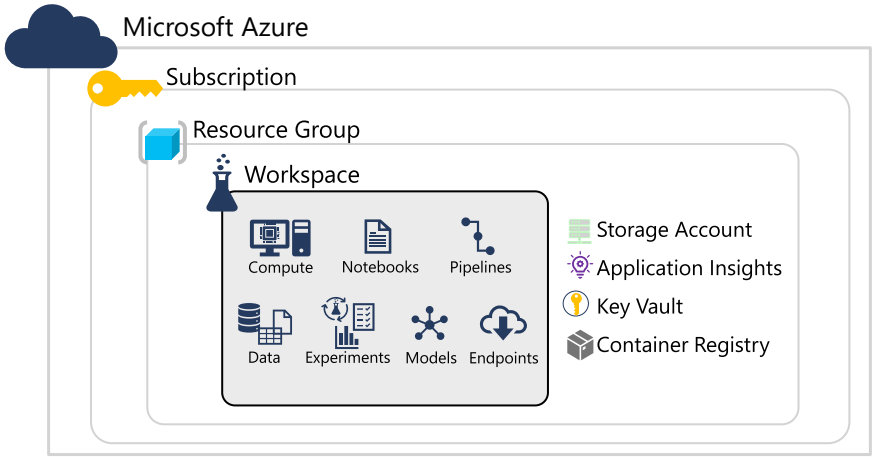
Azure Machine Learning Workspaces



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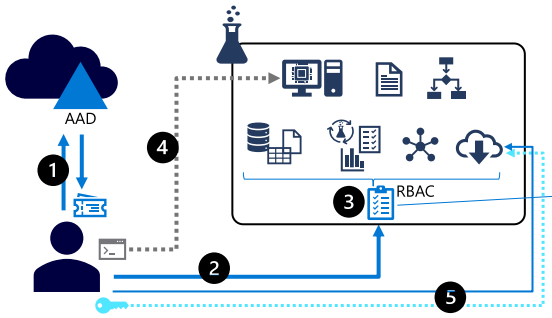
Access Control and Permissions



Default RBAC permissions

Permission	Owner	Contributor	Reader
Create workspace	✓	✓	
Share workspace	✓		
Create compute target	✓	✓	
Attach compute target	✓	✓	
Attach data stores	✓	✓	
Run experiment	✓	✓	
View runs/metrics	✓	✓	✓
Register model	✓	✓	
Create image	✓	✓	
Deploy web service	✓	✓	
View models/images	✓	✓	✓
Call web service	✓	✓	✓

1. User signs into Azure Active Directory (AAD) and obtains token
2. Token grants access to Azure Machine Learning workspace
3. Role-based access control (RBAC) permissions control resource access
4. Compute resources can optionally allow access via SSH
5. Deployed service endpoints can use key or token-based access

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Working with Azure Machine Learning

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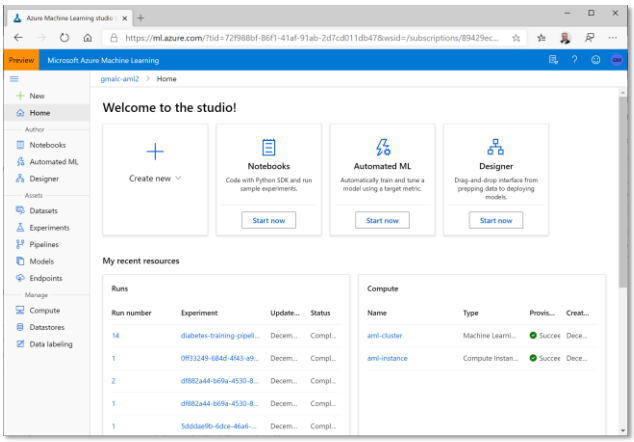
Azure Machine Learning studio



Manage compute and data

Run experiments

View metrics and logs

Manage and deploy models

Manage service endpoints

Label image data

Use graphical modeling tools:

- *Automated ML* - find the best model for your data
- *Designer* – drag and drop model development

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The Azure Machine Learning SDK for Python

Python programming interface for Azure Machine Learning

```
pip install azureml-sdk
```

```
from azureml.core import Workspace

ws = Workspace.from_config()
for compute_name in ws.compute_targets:
    compute = ws.compute_targets[compute_name]
    print(compute.name, ":", compute.type)
```


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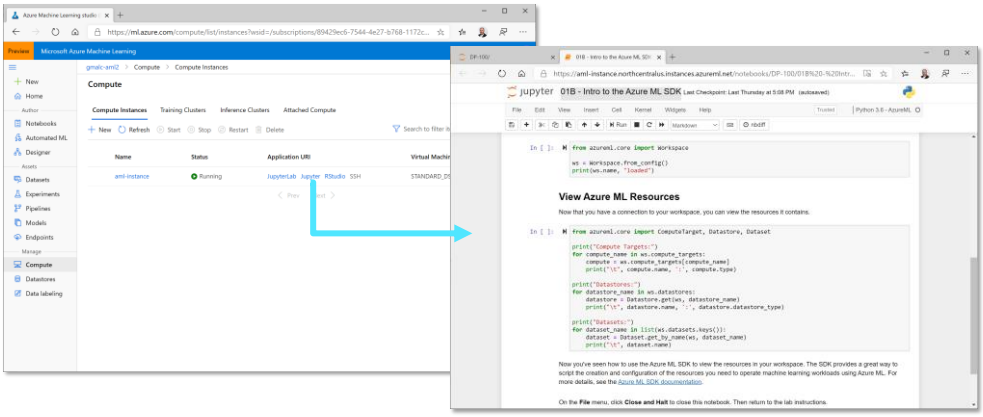
Azure Machine Learning Compute Instances

A cloud-based development workstation right in your workspace

Built-in Jupyter, JupyterLab, and RStudio



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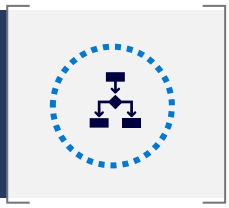
Azure Machine Learning Designer



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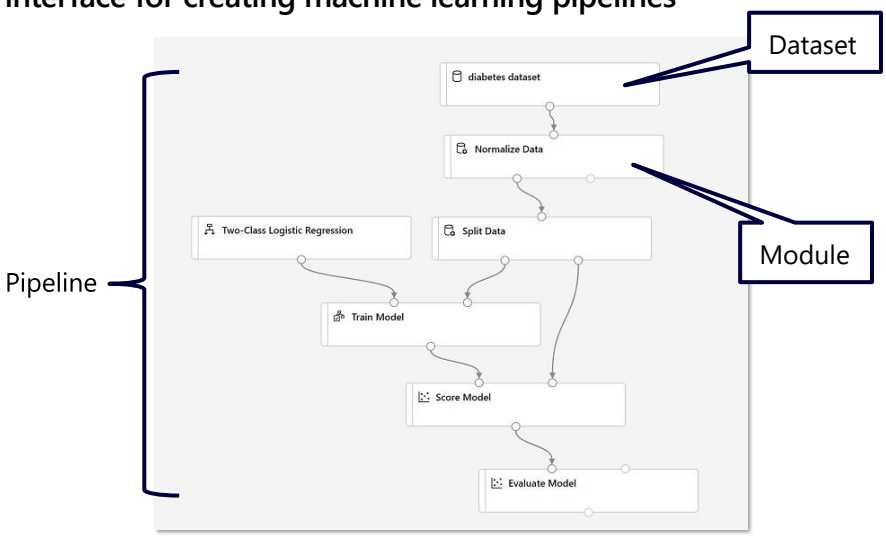
What is Azure Machine Learning Designer?

A visual interface for creating machine learning pipelines



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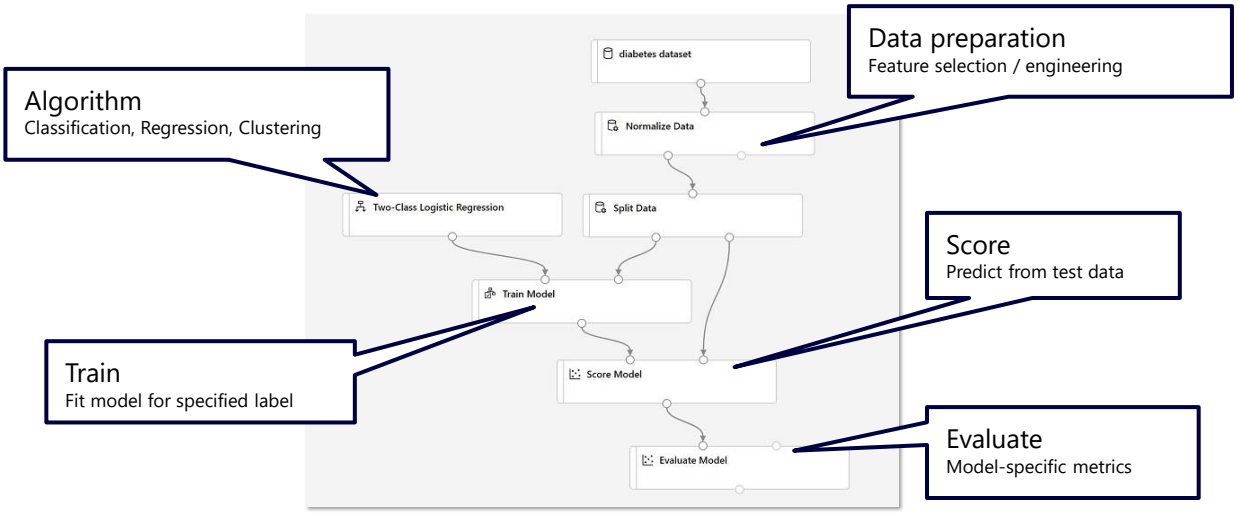
Training Pipelines

Data preparation, model training, scoring, and evaluation



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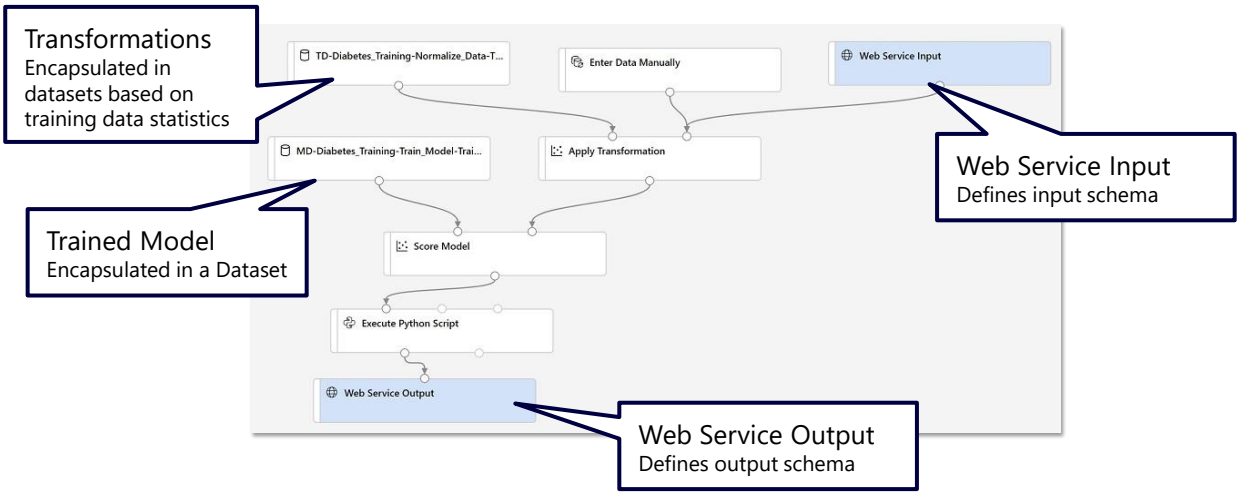
Inference Pipelines

Use the trained model to get predictions from new data



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Publishing a Service Endpoint

Deploy a Real-Time Pipeline:

Specify deployment target:

- Azure Container Instance
- Azure Kubernetes Services Inference Compute

Submit new data to an HTTP endpoint for immediate results

Publish a Batch Pipeline

Runs on Azure Machine Learning Training Compute

Initiate a pipeline experiment run through an HTTP endpoint

Results are saved in the run output

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Microsoft Azure

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