



Module 1: Introduction to Azure Machine Learning



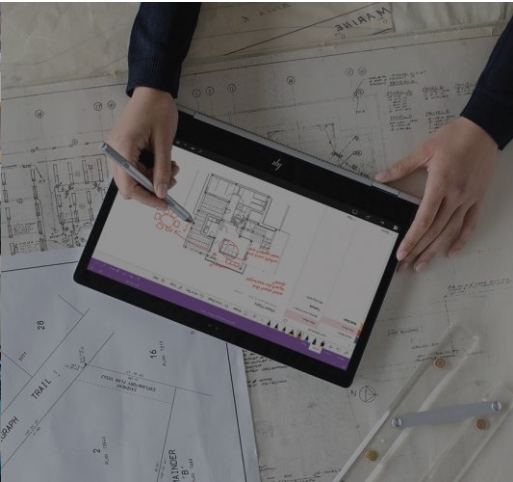
Agenda

- Getting Started with Azure Machine Learning
- Azure Machine Learning Tools



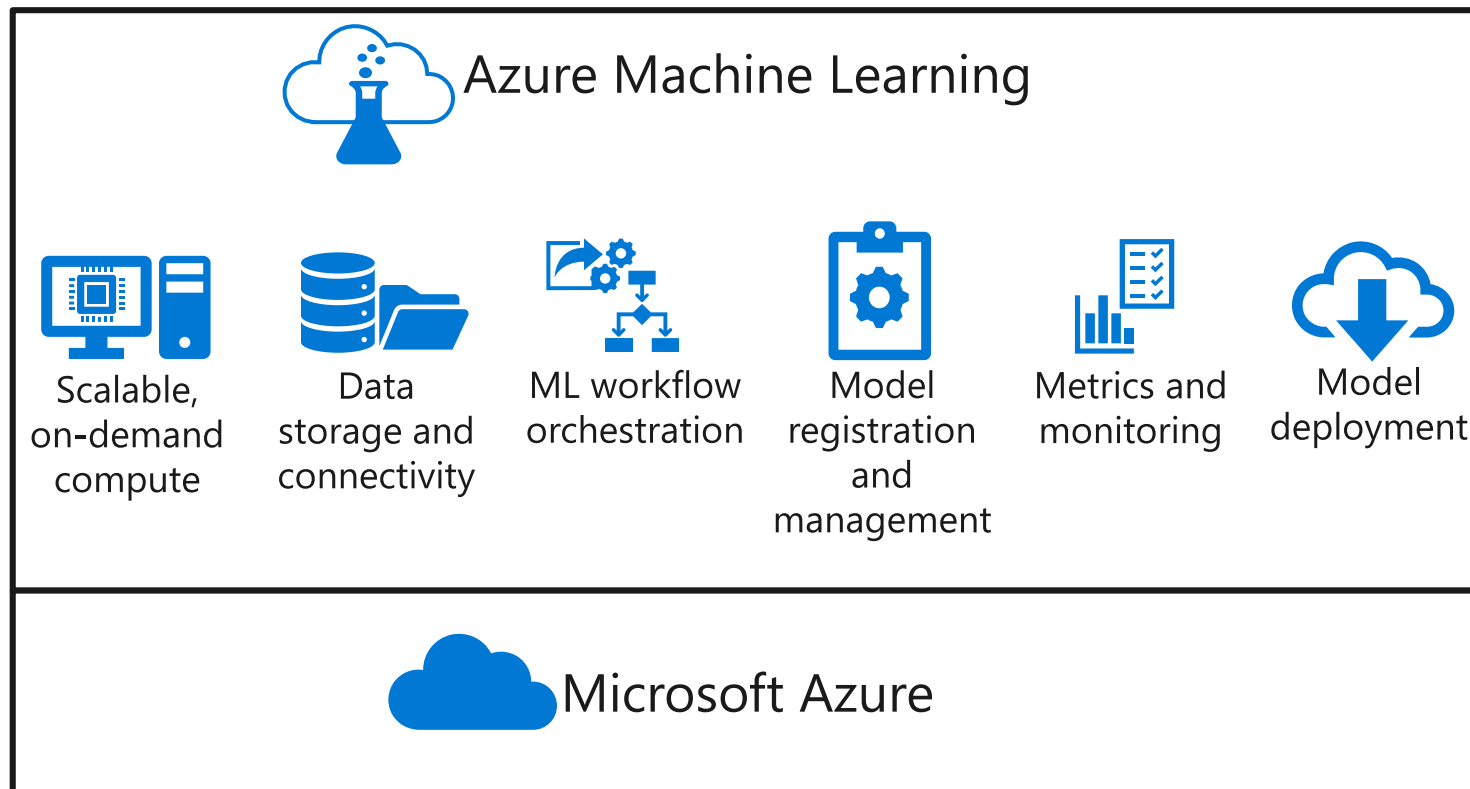
Lesson 1

Getting Started with Azure Machine Learning

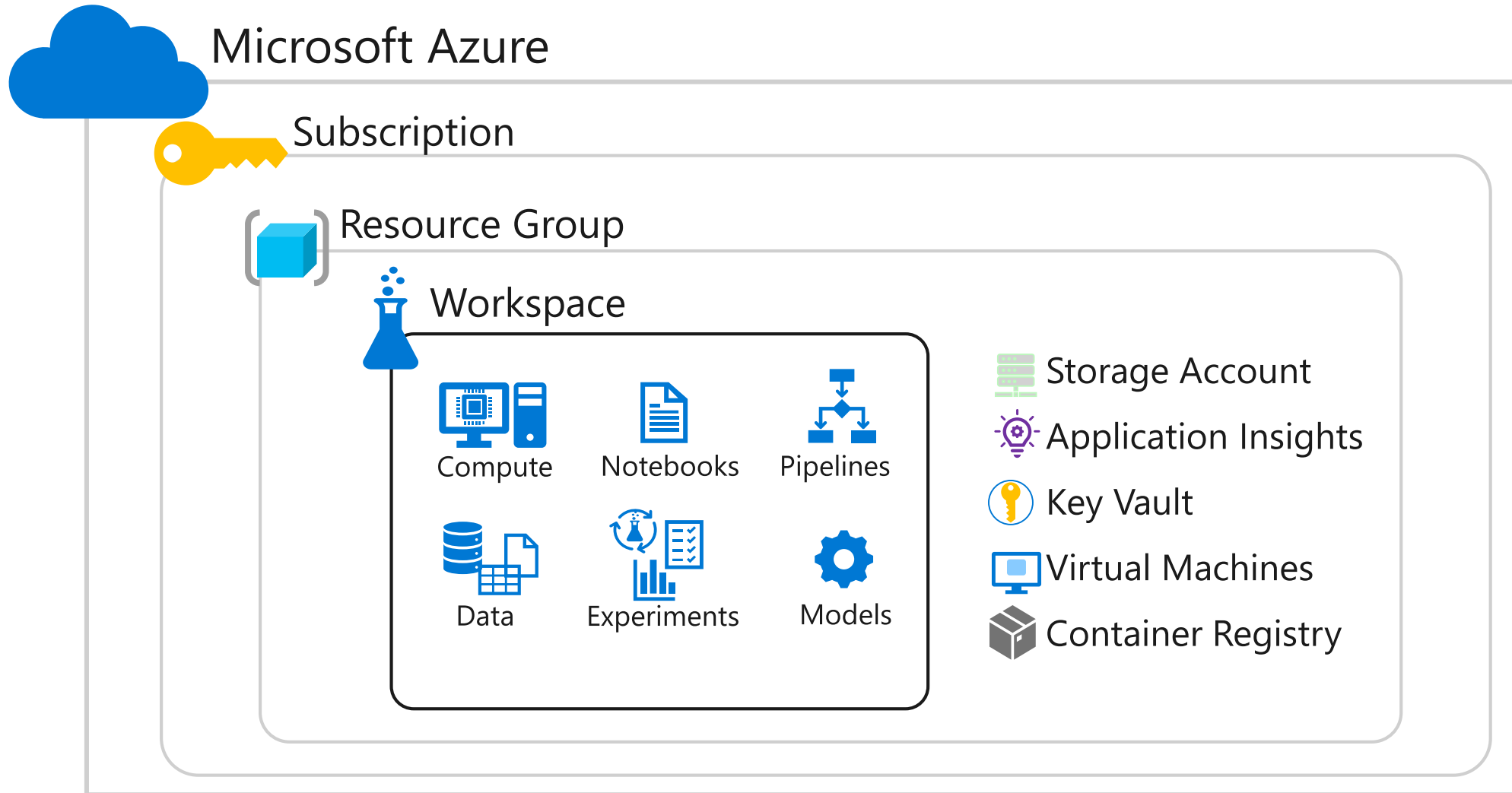


What is Azure Machine Learning?

A platform for operating machine learning workloads in the cloud



Azure Machine Learning Workspaces



Considerations for Creating a Workspace



Region

Check Azure Resource availability

For example, NC-Series Virtual
Machines for GPU processing



Edition

Enterprise

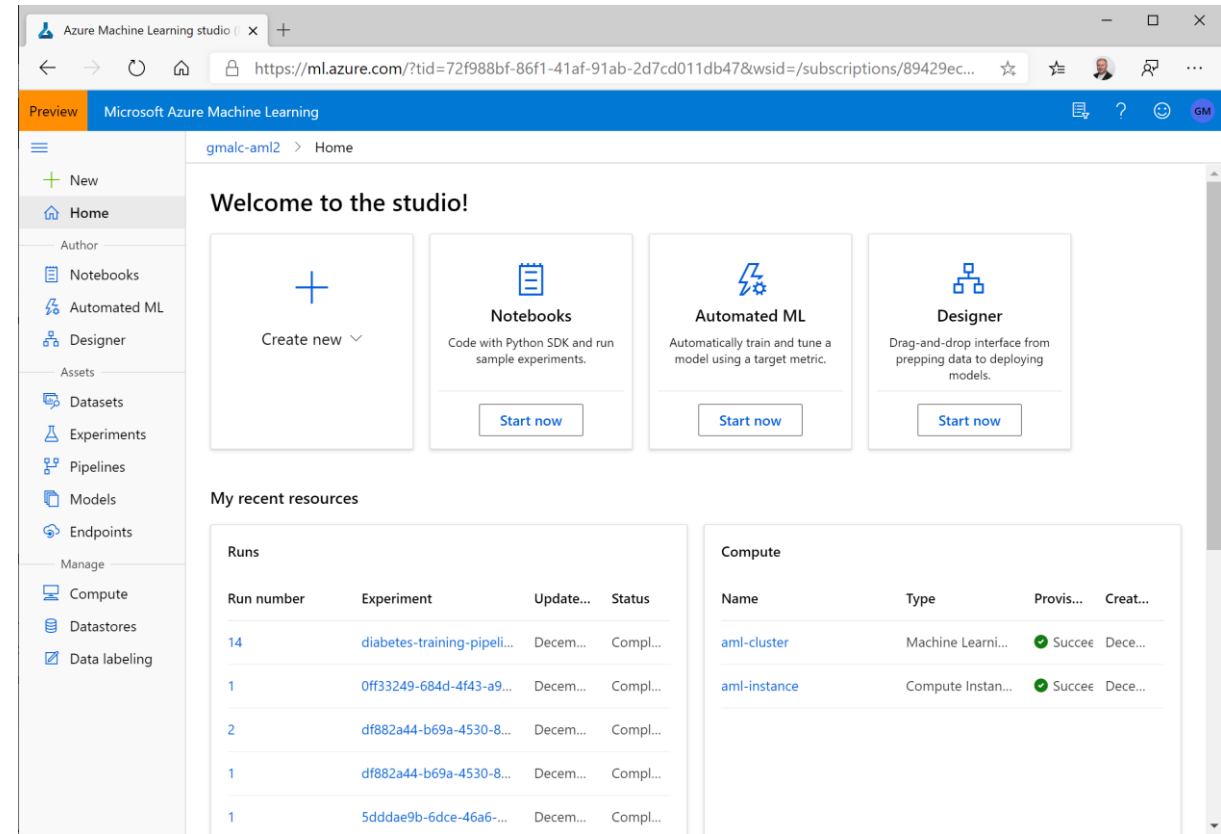
- All features

Basic

- No Visual Designer
- No Automated ML user interface
- No Data Drift user interface

Azure Machine Learning studio

- Manage compute and data
- Run experiments
- View metrics
- Manage and deploy models
- Manage endpoints
- Use graphical modeling tools:
 - *Designer* - "no-code" model development
 - *Automated Machine Learning* - find the best model for your data





Lab 1A

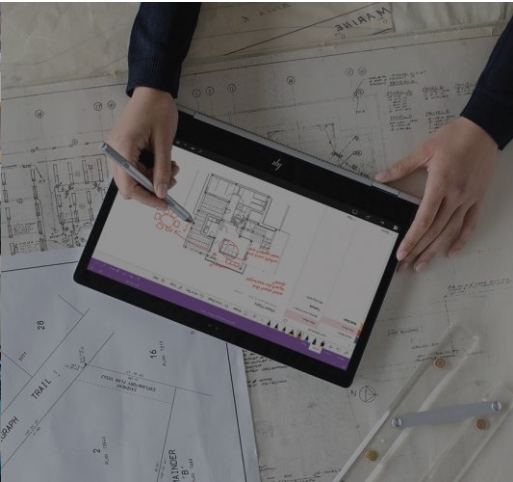
Creating an Azure Machine Learning Workspace

<https://aka.ms/msl-dp100>



Lesson 2

Azure Machine Learning Tools



The Azure Machine Learning SDK for Python

Code-based configuration for machine learning assets:

- Automate repeatable asset creation
- Ensure consistency across development, test, and production environments
- Incorporate machine learning asset configuration into DevOps

```
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)
```

Azure Machine Learning CLI Extension

Azure Machine Learning commands for the Azure CLI

- Cross-platform command-line management of Azure Machine Learning assets

```
az extension add -n azure-cli-ml
```

```
az ml computetarget list -g 'aml-resources' -w 'aml-workspace'
```

Compute Instances

- Jupyter Notebook and JupyterLab servers in your workspace
- Choose the compute specifications you need

The image shows two overlapping screenshots from the Azure Machine Learning studio. The background screenshot displays the 'Compute' section of the studio, specifically the 'Compute Instances' tab. A table lists available compute instances, with one instance named 'aml-instance' in a 'Running' state. A green arrow points from the 'JupyterLab' link in the 'Application URI' column of this instance to the foreground screenshot. The foreground screenshot shows a Jupyter Notebook titled '01B - Intro to the Azure ML SDK'. The notebook contains two code cells. The first cell imports the 'Workspace' class from 'azureml.core' and prints the workspace name. The second cell imports 'ComputeTarget', 'Datastore', and 'Dataset' from 'azureml.core' and prints details about the workspace's compute targets, datastores, and datasets. Below the code cells, there is explanatory text about using the Azure ML SDK to view resources and a note about closing the notebook.

Compute Instances Table:

Name	Status	Application URI	Virtual Machine
aml-instance	Running	JupyterLab Jupyter RStudio SSH	STANDARD_DS

Jupyter Notebook Code:

```
In [ ]: from azureml.core import Workspace
ws = Workspace.from_config()
print(ws.name, "loaded")
```

View Azure ML Resources

Now that you have a connection to your workspace, you can view the resources it contains.

```
In [ ]: from azureml.core import ComputeTarget, Datastore, Dataset

print("Compute Targets:")
for compute_name in ws.compute_targets:
    compute = ws.compute_targets[compute_name]
    print("\t", compute.name, ': ', compute.type)

print("Datastores:")
for datastore_name in ws.datastores:
    datastore = Datastore.get(ws, datastore_name)
    print("\t", datastore.name, ': ', datastore.datastore_type)

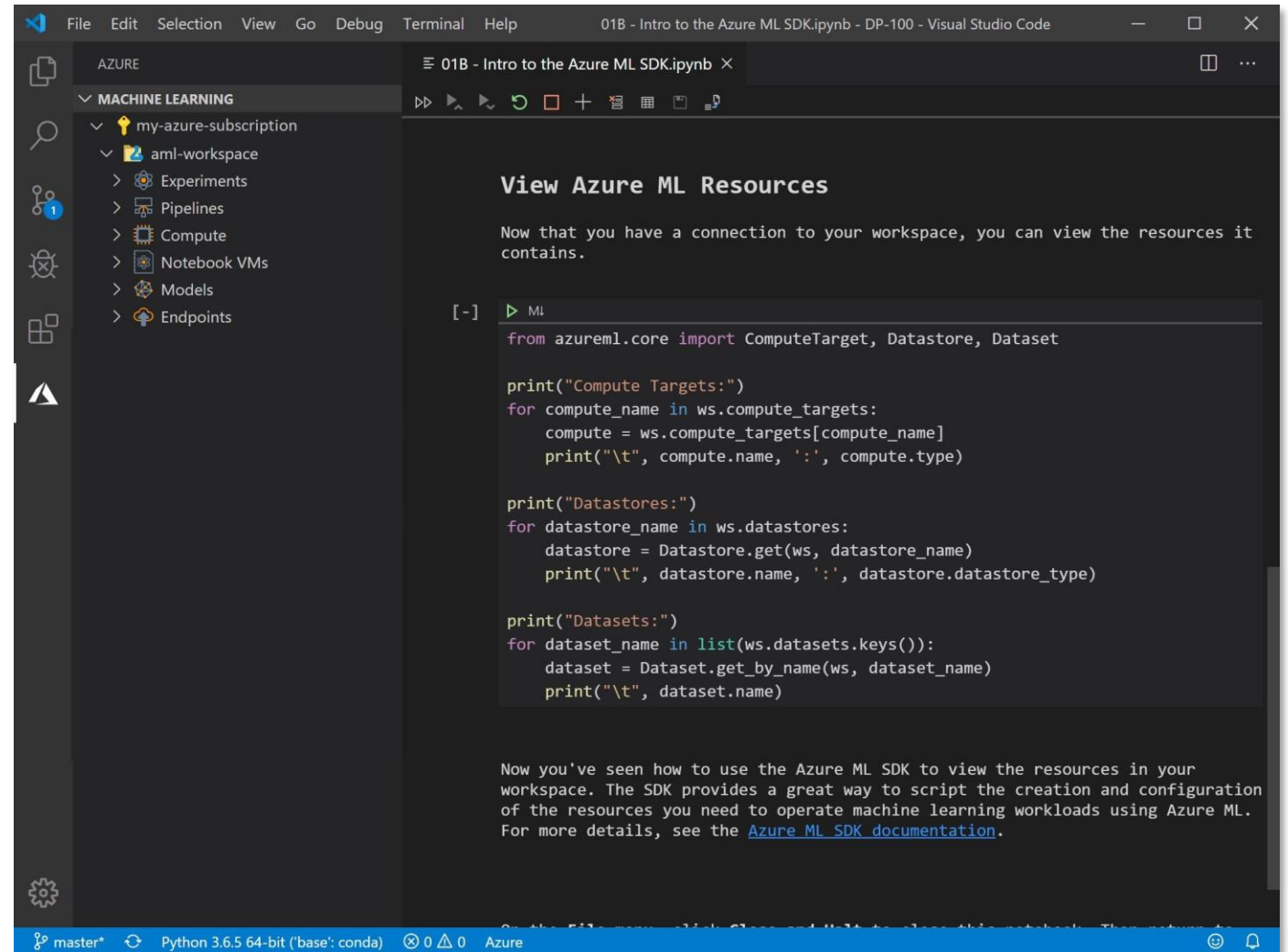
print("Datasets:")
for dataset_name in list(ws.datasets.keys()):
    dataset = Dataset.get_by_name(ws, dataset_name)
    print("\t", dataset.name)
```

Now you've seen how to use the Azure ML SDK to view the resources in your workspace. The SDK provides a great way to script the creation and configuration of the resources you need to operate machine learning workloads using Azure ML. For more details, see the [Azure ML SDK documentation](#).

On the **File** menu, click **Close and Halt** to close this notebook. Then return to the lab instructions.

The Azure Machine Learning Extension for VS Code

- Graphical Interface for working with Azure Machine Learning
- When combined with the Python extension, a complete development environment for Azure Machine Learning





Lab 1B

Working with Azure Machine Learning Tools

<https://aka.ms/msl-dp100>