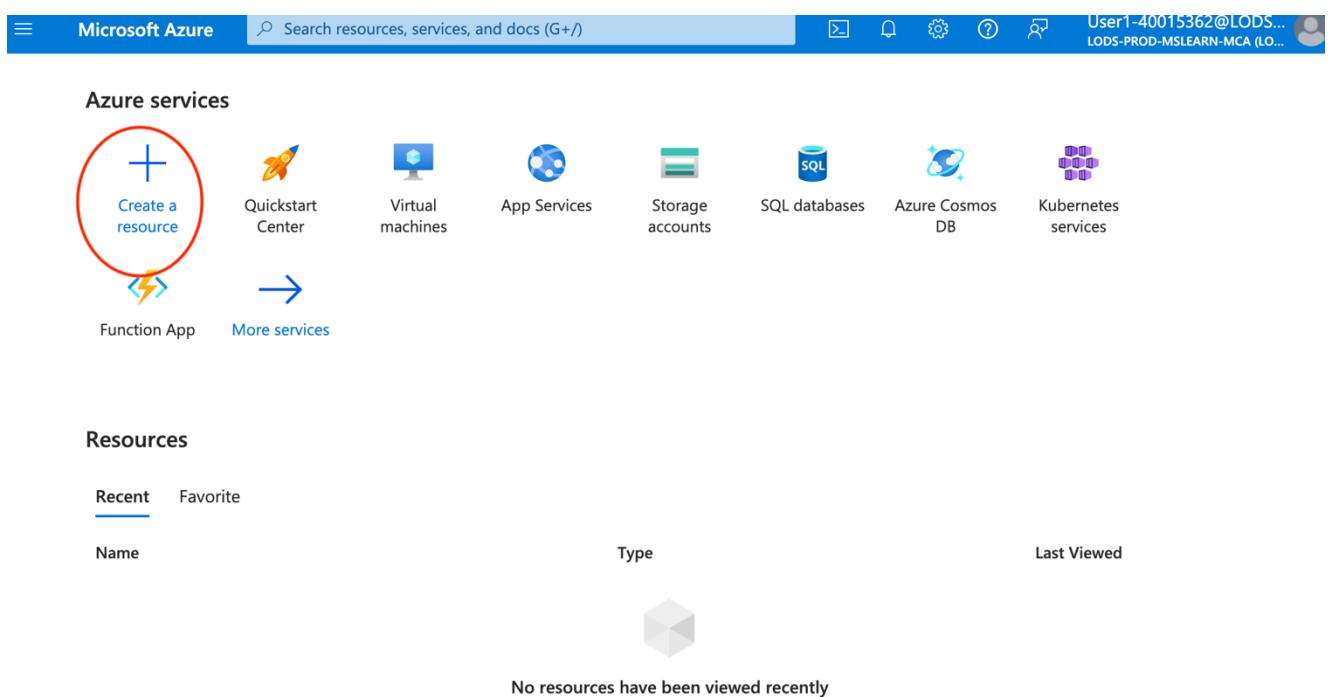


HI6039 Predictive Analytics

Tutorial 4: Create resource, workspace, compute, and dataset in MS Azure Machine Learning

Create resource

1. Select ‘Create a resource’



The screenshot shows the Microsoft Azure portal interface. At the top, there is a navigation bar with the Microsoft Azure logo, a search bar, and user information. Below the navigation bar, the main content area is titled "Azure services". On the left, there is a "Create a resource" button, which is circled in red. To the right of this button are icons for "Quickstart Center", "Virtual machines", "App Services", "Storage accounts", "SQL databases", "Azure Cosmos DB", and "Kubernetes services". Below these icons, there are two buttons: "Function App" and "More services". An arrow points from the "Create a resource" button towards the "More services" button. The bottom section of the screenshot is titled "Resources" and shows a table with columns for "Name", "Type", and "Last Viewed". The table is currently empty, displaying the message "No resources have been viewed recently".

2. Type “Azure Machine Learning” and then select “Azure Machine Learning”

Marketplace ... X

Get Started Service Providers Management

Showing 1 to 20 of 1193 results for 'Azure Machine Learning'. [Clear search](#) Tile view ▾

Azure Machine Learning Azure services only

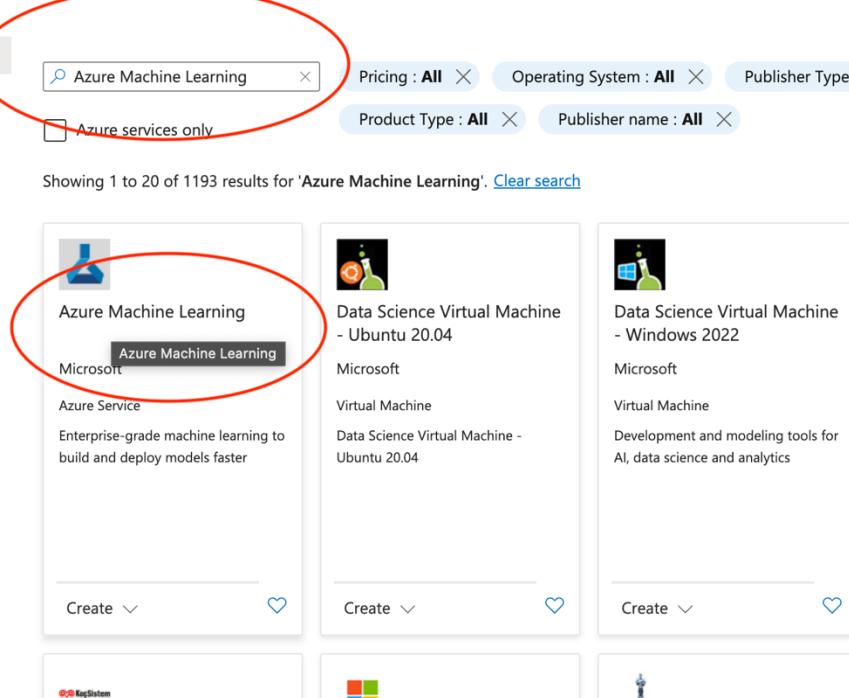
Pricing : All × Operating System : All × Publisher Type : All × Product Type : All × Publisher name : All ×

My Marketplace

Private Marketplace Private Offer Management Favorites My solutions Recently created Private plans

Categories

AI + Machine Learning (786) Analytics (298)



3. Click to “Create”

Azure Machine Learning X

Microsoft



Azure Machine Learning Add to Favorites

Microsoft | Azure Service ★ 4.3 (153 ratings)

Plan Azure Machine Learning Create

[Overview](#) [Plans](#) [Usage Information + Support](#) [Ratings + Reviews](#)

Azure Machine Learning empowers developers and data scientists with a wide range of productive experiences for building, training, and deploying machine learning models. Create an Azure Machine Learning workspace to train, manage, and deploy machine-learning experiments and web services.

Media



4. Click to ‘Create new’

Azure Machine Learning

Create a machine learning workspace

X

Basics Networking Encryption Identity Tags Review + create

Resource details

Every workspace must be assigned to an Azure subscription, which is where billing happens. You use resource groups like folders to organize and manage resources, including the workspace you're about to create.

[Learn more about Azure resource groups](#)

Subscription * ⓘ MOC Subscription--lod49031983 ✓

Resource group * ⓘ Create new

Workspace details

Configure your basic workspace settings like its storage connection, authentication, container, and more. [Learn more](#)

Name * ⓘ

Region * ⓘ East US 2 ✓

Storage account * ⓘ

Key vault * ⓘ

5. Enter a resource name and click to ‘OK’

Azure Machine Learning

Create a machine learning workspace

X

Basics Networking Encryption Identity Tags Review + create

Resource details

Every workspace must be assigned to an Azure subscription, which is where billing happens. You use resource groups like folders to organize and manage resources, including the workspace you're about to create.

[Learn more about Azure resource groups](#)

Subscription * ⓘ MOC Subscription--lod49031983 ✓

Resource group * ⓘ Create new

Workspace details

Configure your basic workspace settings like

A resource group is a container that holds related resources for an Azure solution.

[Learn more](#)

Name * ⓘ Name

Region * ⓘ

Storage account * ⓘ

Key vault * ⓘ

[Review + create](#)

< Previous

Next : Networking

6. Enter a workspace name, and click to ‘Review + Create’

Azure Machine Learning ... X

Create a machine learning workspace

Basics Networking Encryption Identity Tags Review + create

Resource details

Every workspace must be assigned to an Azure subscription, which is where billing happens. You use resource groups like folders to organize and manage resources, including the workspace you're about to create.

[Learn more about Azure resource groups](#)

Subscription * ⓘ MOC Subscription--lod49031983

Resource group * ⓘ (New) HI6039RG [Create new](#)

Workspace details

Configure your basic workspace settings like its storage connection, authentication, container, and more. [Learn more](#)

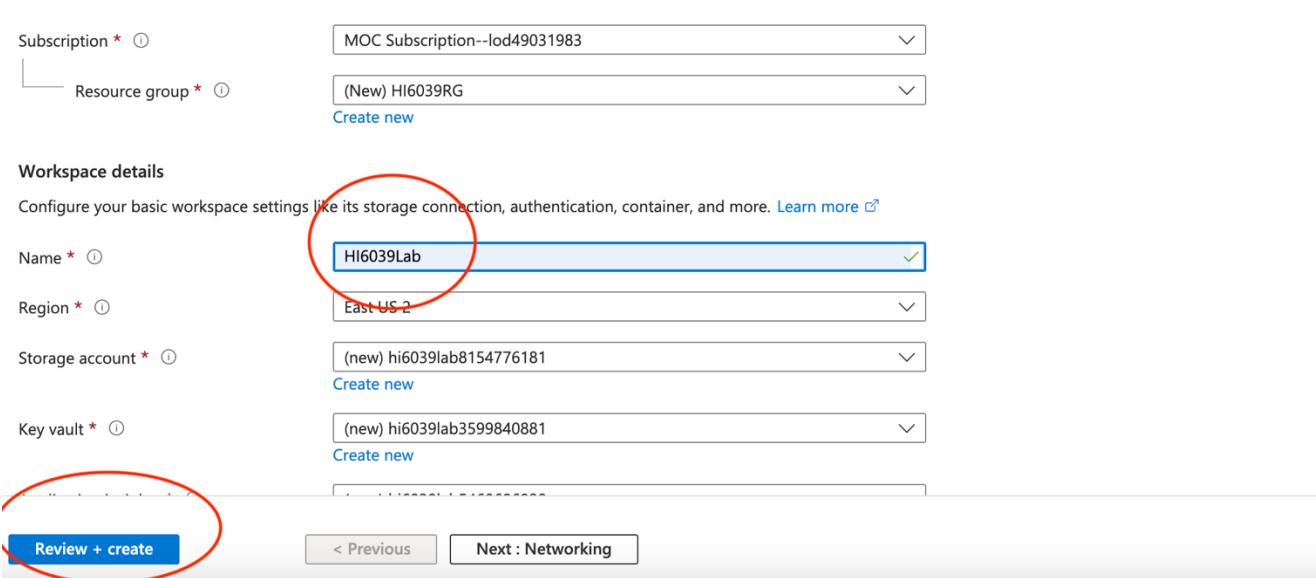
Name * ⓘ HI6039Lab

Region * ⓘ East US 2

Storage account * ⓘ (new) hi6039lab8154776181 [Create new](#)

Key vault * ⓘ (new) hi6039lab3599840881 [Create new](#)

[Review + create](#) [< Previous](#) [Next : Networking](#)



7. Wait for validation

Azure Machine Learning ... X

Create a machine learning workspace

Running final validation...

Basics Networking Encryption Identity Tags Review + create

Basics

Subscription	MOC Subscription--lod49031983
Resource group	(New) HI6039RG
Region	East US 2
Name	HI6039Lab
Storage account	(new) hi6039lab8154776181
Key vault	(new) hi6039lab3599840881
Application insights	(new) hi6039lab5460686928
Container registry	None

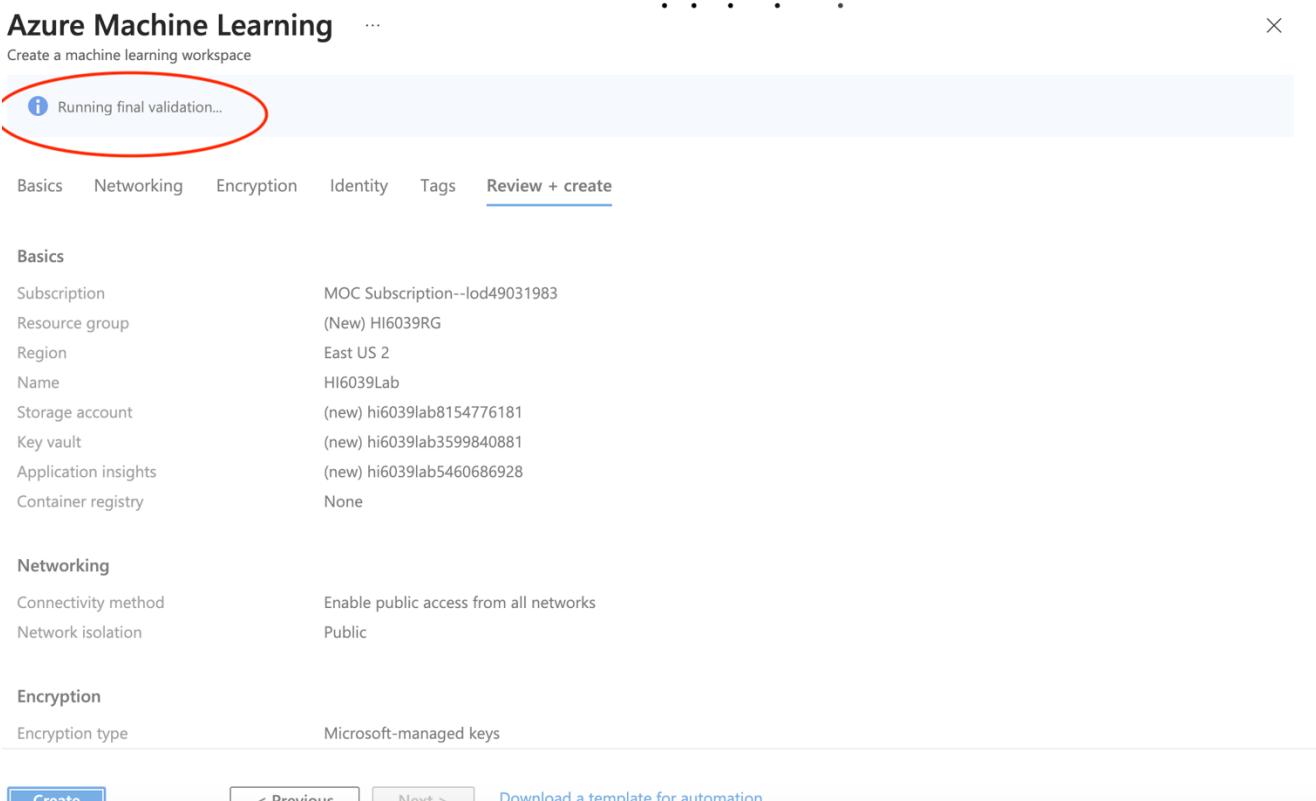
Networking

Connectivity method	Enable public access from all networks
Network isolation	Public

Encryption

Encryption type	Microsoft-managed keys
-----------------	------------------------

[Create](#) [< Previous](#) [Next >](#) [Download a template for automation](#)



8. Click to 'Create'

Azure Machine Learning

Create a machine learning workspace

✓ Validation passed

Basics Networking Encryption Identity Tags Review + create

Basics

Subscription	MOC Subscription--lod49031983
Resource group	(New) HI6039RG
Region	East US 2
Name	HI6039Lab
Storage account	(new) hi6039lab8154776181
Key vault	(new) hi6039lab3599840881
Application insights	(new) hi6039lab5460686928
Container registry	None

Networking

Connectivity method	Enable public access from all networks
Network isolation	Public

Encryption

Encryption type	Microsoft-managed keys
-----------------	------------------------

Create

< Previous

Next >

Download a template for automation

9. Wait for deployment progress

Microsoft.MachineLearningServices | Overview

Deployment

Search Delete Cancel Redeploy Download Refresh

Overview Inputs Outputs Template

Deployment is in progress

Deployment name: Microsoft... Start time: 24/04/2024, 05:12:12
Subscription: MOC Subscriptio... Correlation ID: 0459362f-c7f6-4515-1
Resource group: HI6039RG

Deployment details

Resource	Type	Status
hi6039lab2044579239	Microsoft.Operational...	Created
hi6039lab8154776181	Microsoft.Storage/stor...	OK
hi6039lab3599840881	Microsoft.KeyVault/va...	OK

Give feedback Tell us about your experience with deployment

Microsoft Defender for Cloud
Secure your apps and infrastructure
[Go to Microsoft Defender for Cloud >](#)

Free Microsoft tutorials
[Start learning today >](#)

Work with an expert
Azure experts are service provider partners
who can help manage your assets on Azure
and be your first line of support.
[Find an Azure expert >](#)

10. Click to ‘Go to resource’

Microsoft.MachineLearningServices | Overview

Deployment

Search Delete Cancel Redeploy Download Refresh

Overview Inputs Outputs Template

Your deployment is complete

Deployment name: Microsoft... Start time: 24/04/2024, 05:12:12
Subscription: MOC Subscriptio... Correlation ID: 0459362f-c7f6-4515-1
Resource group: HI6039RG

Deployment details Next steps

Go to resource

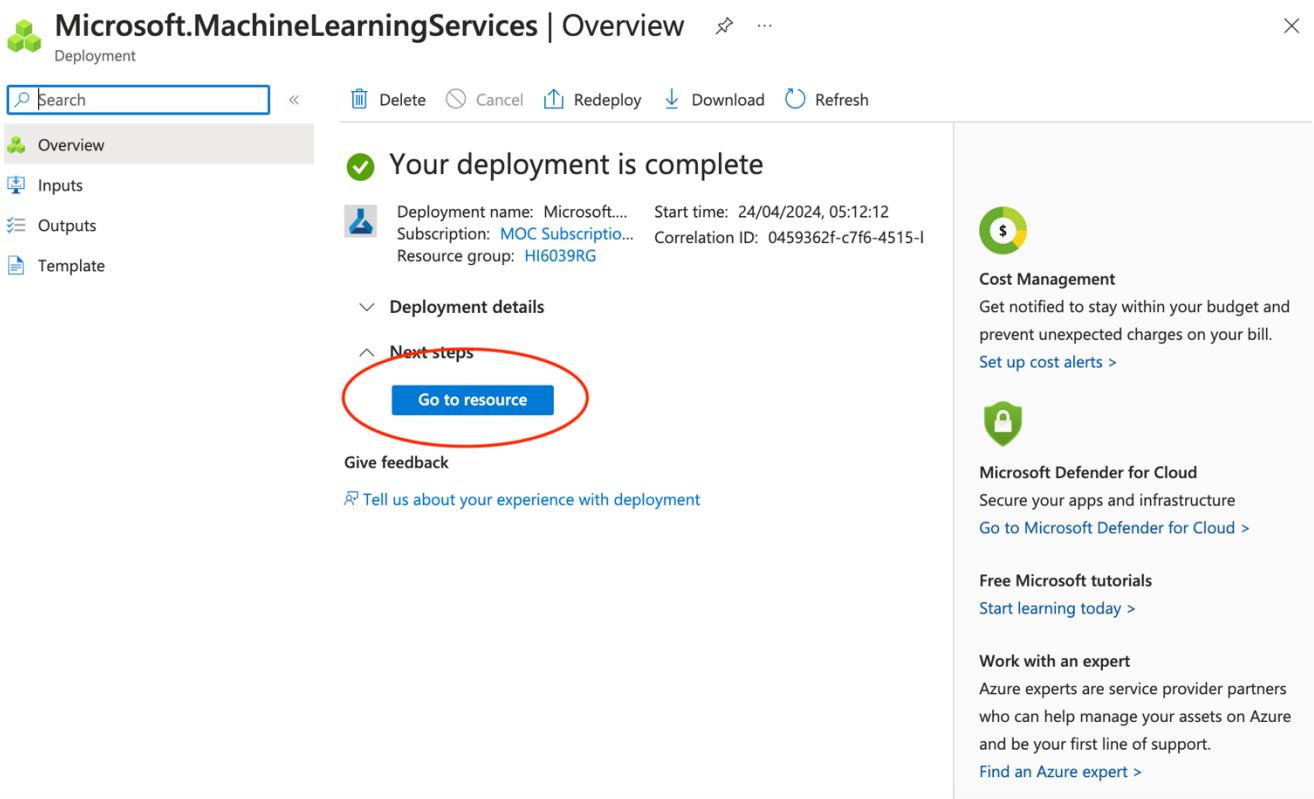
Give feedback Tell us about your experience with deployment

Cost Management
Get notified to stay within your budget and prevent unexpected charges on your bill.
[Set up cost alerts >](#)

Microsoft Defender for Cloud
Secure your apps and infrastructure
[Go to Microsoft Defender for Cloud >](#)

Free Microsoft tutorials
[Start learning today >](#)

Work with an expert
Azure experts are service provider partners who can help manage your assets on Azure and be your first line of support.
[Find an Azure expert >](#)



11. Click to “Studio web URL”

Microsoft Azure Search resources, services, and docs (G+/-)

Home > Microsoft.MachineLearningServices | Overview >

HI6039Lab Azure Machine Learning workspace

Search Download config.json Delete

Overview Activity log Access control (IAM) Tags Diagnose and solve problems Events

Settings Networking Properties Locks

Monitoring Alerts Metrics Diagnostic settings

Essentials

Resource group **HI6039RG**

Location East US 2

Subscription [MOC Subscription--lod49031983](#)

Storage [hi6039lab8154776181](#)

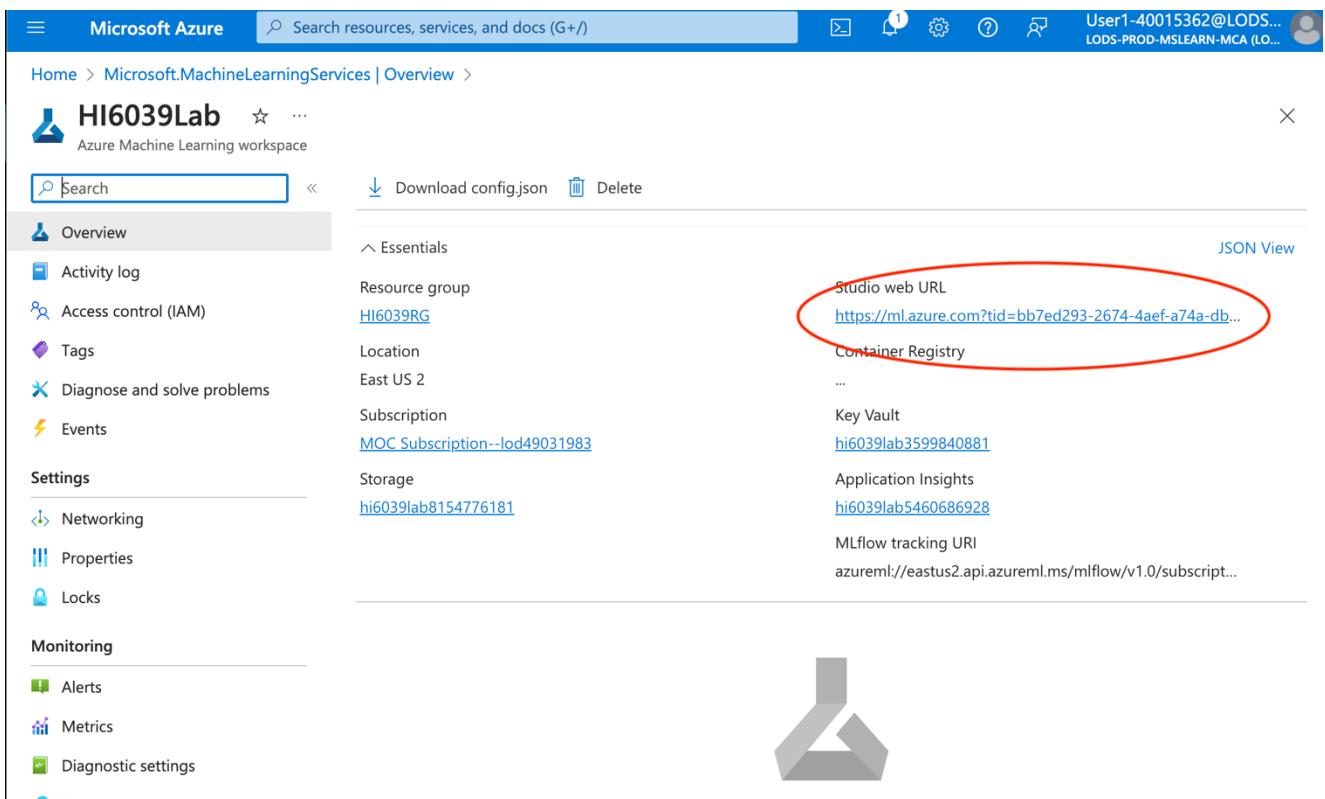
Studio web URL <https://ml.azure.com?tid=bb7ed293-2674-4aef-a74a-db...>

Container Registry

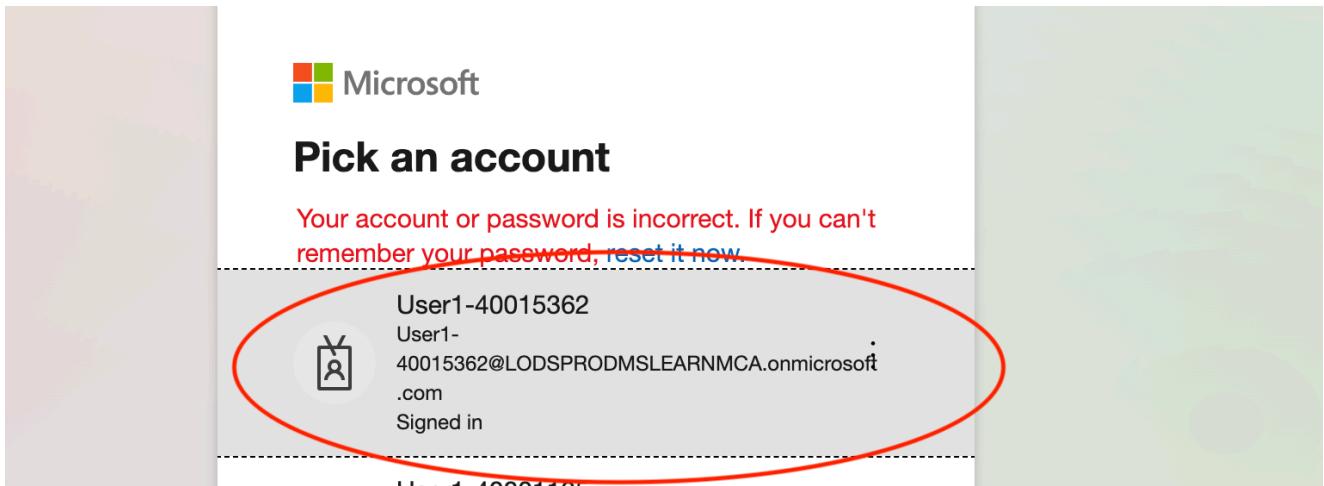
Key Vault [hi6039lab3599840881](#)

Application Insights [hi6039lab5460686928](#)

MLflow tracking URI [azurerm://eastus2.api.azureml.ms/mlflow/v1.0/subscript...](#)



12. Select your account name. You may need to enter your password



13. Click to 'Workspace'

A screenshot of the Azure AI | Machine Learning Studio interface. On the left, a sidebar shows a workspace named "LODS-Prod-MSLearn-MCA" with "Workspaces" highlighted by a red circle. The main area is titled "Welcome to the Azure Machine Learning Studio" and features sections for "Learning components", "Tutorials", and "Additional resources".

14. Click to your workspace

Screenshot of the Azure AI | Machine Learning Studio Workspaces page. The left sidebar shows navigation options like Workspaces, Feature stores, Registries, Shared assets, Admin, and Quota. The main area displays a table of workspaces. A row for 'HI6039Lab' is highlighted with a red circle around its 'Workspace name' column. The table columns include Workspace name, Resource group, Region, Subscription, and Created.

Workspace name	Resource group	Region	Subscription	Created
HI6039Lab	hi6039rg	eastus2	MOC Subscription--lod49031983	Apr 24,

15. Now, you can see the screen as follows:

Screenshot of the Azure AI | Machine Learning Studio workspace named 'HI6039Lab'. The left sidebar lists categories like Authoring, Assets, Manage, etc. The main area features sections for 'Generative AI with Prompt flow', 'Generative AI models', and 'Notebook samples'. Each section contains cards with preview images, descriptions, and 'Start' or 'Clone' buttons.

Generative AI with Prompt flow

- Multi-Round Q&A on Your Data
- Q&A on Your Data
- Web Classification
- Chat with Wikipedia

Generative AI models

- Phi-3-mini-4k-instruct
- Phi-3-mini-128k-instruct
- Meta-Llama-3-8B-Instruct
- Meta-Llama-3-70B-Instruct

Notebook samples

Create compute

1. Click to ‘Compute’

The screenshot shows the Azure AI | Machine Learning Studio interface. On the left, there's a sidebar with sections like 'Authoring', 'Assets', 'Manage' (with 'Compute' circled in red), and 'Notebooks'. The main area is titled 'HI6039Lab' and features several cards for 'Generative AI with Prompt flow': 'Multi-Round Q&A on Your Data', 'Q&A on Your Data', 'Web Classification', and 'Chat with Wikipedia'. Below this is a section for 'Generative AI models' with cards for 'Phi-3-mini-4k-instruct', 'Phi-3-mini-128k-instruct', 'Meta-Llama-3-8B-Instruct', and 'Meta-Llama-3-70B-Instruct'. At the bottom, there's a 'Notebook samples' section with a 'View all' button.

2. Click to ‘New’

The screenshot shows the 'Compute' section of the Azure AI | Machine Learning Studio. The sidebar has 'Compute' selected. The main area is titled 'Compute' and includes tabs for 'Compute instances', 'Compute clusters', 'Kubernetes clusters', and 'Attached computes'. It features a graphic of cloud storage and processing units. A callout text says 'Get started with Azure Machine Learning notebooks and R scripts by creating a compute instance'. At the bottom, there's a 'New' button circled in red.

3. Enter ‘Compute name’, select ‘Standard_E4ds_v4’, and click to ‘Review + Create’

Create compute instance

Required settings

Compute name * ⓘ HI6037-compute1

Virtual machine type ⓘ

CPU GPU

Virtual machine size ⓘ

Select from recommended options Select from all options

Name ↑	Category	Workload types	Available quota ⓘ	Cost ⓘ
Standard_DS11_v2 2 cores, 14GB RAM, 28GB storage	Memory optimized	Development on Notebooks (or other IDE) and light weight testing	300 cores	\$0.15/hr
Standard_DS3_v2 4 cores, 14GB RAM, 28GB storage	General purpose	Classical ML model training on small datasets	300 cores	\$0.23/hr
Standard_E4ds_v4 4 cores, 32GB RAM, 150GB storage	Memory optimized	Data manipulation and training on medium-sized datasets (1-10GB)	350 cores	\$0.29/hr
Standard_D13_v2 8 cores, 56GB RAM, 100GB storage	Memory optimized	Data manipulation and training on large datasets (>10 GB)	300 cores	\$0.60/hr

Review + Create Back Next Cancel

4. Click to 'Create'

Create compute instance

Review

Review or make changes to your job before submission. [Download a template for automation.](#)

Required settings		Review
Compute name	HI6037-compute1	Virtual machine
Virtual machine type	CPU	Standard_E4ds_v4 4 cores, 32GB RAM, 150GB storage

Scheduling		Review
Auto shutdown enabled by default		
Auto shutdown	After 60 minutes of inactivity	Start up and shutdown schedule --

Security		Review
Enable SSH	no	Enable managed identity
		no

Create Back Cancel

5. Now, you can see the compute has been created and is running.

LODS-Prod-MSLearn-MCA > HI6039Lab > Compute

Compute

The "Kubernetes clusters" tab is now where you can access previous versions of "inference clusters" (also known as "AKS clusters") and "attached Kubernetes" compute types along with any previously created compute targets using those types. [Learn more](#) about Kubernetes clusters.

Compute instances Compute clusters Kubernetes clusters Attached computes

Choose from a selection of CPU or GPU instances preconfigured with popular tools such as VS Code, JupyterLab, Jupyter, and RStudio, ML packages, deep learning frameworks, and GPU drivers. [Learn more about compute instances](#)

+ New Refresh Start Stop Restart Schedule and idle shutdown Delete Reset view View quota

Search Filter Columns

Name	State	Idle shutdown	Applications	Size
HI6037-compute1	Running	1 hour	JupyterLab Jupyter VS Code (Web) <small>PREVIEW</small> ...	Standard_E4c

Create dataset

You need to download ‘Real estate price prediction’ dataset (Real estate.csv) from the following URL

<https://www.kaggle.com/datasets/quantbruce/real-estate-price-prediction>

The screenshot shows the Kaggle dataset page for 'Real estate price prediction'. On the left, there's a sidebar with navigation links like Create, Home, Competitions, Datasets, Models, Code, Discussions, Learn, and More. The main area displays the dataset details: Data Card (413), New Notebook, Download (7 kB), and various filters for Learning, Research, and Application. Below this, a section asks how the dataset is described, with options like Well-documented, Clean data, Original, and High-quality notebooks. The central part shows a preview of the 'Real estate.csv' file, which is 21.97 kB and has 8 columns. The first column is labeled '# No'. To the right, a 'Data Explorer' section shows the file version 1 (21.97 kB) and lists 'Real estate.csv'. A red circle highlights the 'Real estate.csv' file name.

1. In ‘Azure AI | Machine Learning Studio’ Click to ‘Data’

The screenshot shows the Azure AI | Machine Learning Studio interface. The left sidebar includes sections for Notebooks, Automated ML, Designer, Prompt flow, Assets (with Data and Jobs), Components, Pipelines, Environments, Models, Endpoints, Manage, Compute (which is selected), and Monitoring. The main area is titled 'Compute' and shows 'Compute instances'. It features a search bar, filter buttons, and a table with columns for Name, State, Idle shutdown, Applications, and more. One instance named 'HI6037-compute1' is listed as 'Running'. A red circle highlights the 'Assets' section in the sidebar, and another red circle highlights the 'Data' option within it.

2. Click to ‘Create’

Azure AI | Machine Learning Studio

LODS-Prod-MSLearn-MCA > HI6039Lab > Data

Data

Data assets Datastores Dataset monitors PREVIEW Data import PREVIEW Data connections PREVIEW

+ Create Refresh Archive Reset view Show latest version only Include archived View my data

Assets

Data Jobs Components Pipelines Environments Models Endpoints

Manage Compute Monitoring Data Labeling

Search: Search Filter Columns

Name	Source	Version	Created on	Modified on	Type	Properties

3. Select ‘From local files’ and click to ‘Next’

Create data asset

1 Data type
2 Data source **3 Destination storage type**
4 File or folder selection
5 Review

Choose a source for your data asset
Choose the data source you want to create your asset from. A data source can be from a local storage location on your computer, from an attached datastore, from Azure storage, or from a publicly available web location.

From Azure storage
Create a data asset from registered data storage services including Azure Blob Storage, Azure file share, and Azure Data Lake.

From local files **(Circled)**
Create a data asset by uploading files from your local drive.

From web files
Create a data asset from a single file located at a public web URL.

Back **Next** Cancel

4. Click to ‘Next’

Create data asset

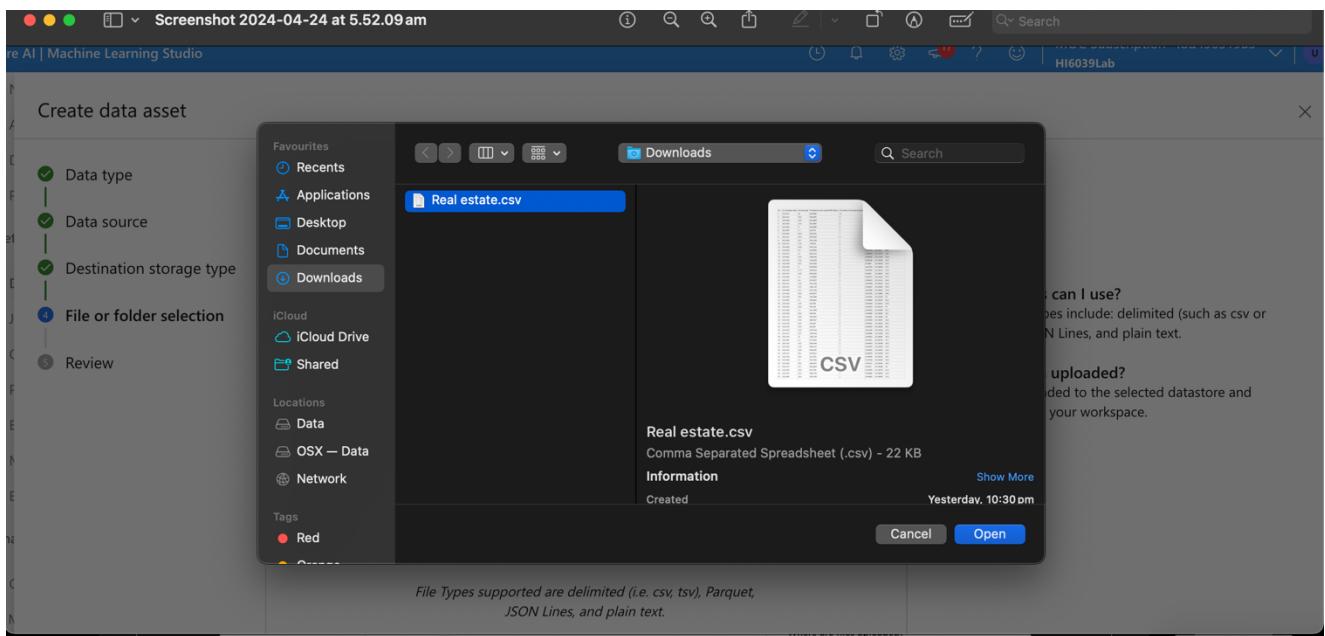
The screenshot shows the 'Select a datastore' step of the 'Create data asset' wizard. On the left, a vertical navigation bar lists steps 1 through 5: Data type, Data source, Destination storage type (which is selected), File or folder selection, and Review. The main area displays a table of datastores. A dropdown menu shows 'Azure Blob Storage' selected. A button 'Create new datastore' is available. The table has columns for Name, Storage name, and Created on. Two entries are listed: 'workspaceblobstore' (Storage name: hi6039lab8154776181, Created on: Apr 24, 2024 5:14 AM) and 'workspaceartifactstore' (Storage name: hi6039lab8154776181, Created on: Apr 24, 2024 5:14 AM). Navigation controls at the bottom include 'Back', a red-circled 'Next' button, and 'Cancel'.

5. Click to ‘Upload files or folder’, then select ‘Upload files’

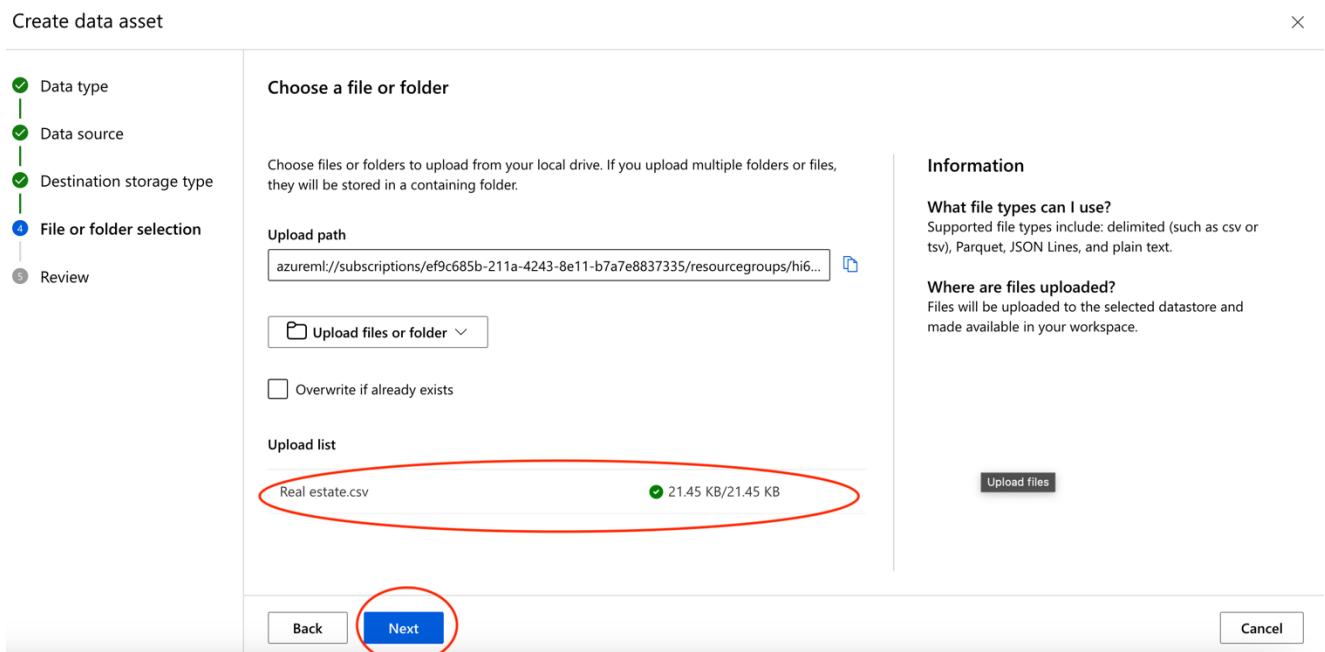
Create data asset

The screenshot shows the 'File or folder selection' step of the 'Create data asset' wizard. The left navigation bar shows steps 1 through 5: Data type, Data source, Destination storage type, File or folder selection (selected), and Review. The main area has a heading 'Choose a file or folder' and instructions to choose files or folders from the local drive. An 'Upload path' field contains the URL 'azureml://subscriptions/ef9c685b-211a-4243-8e11-b7a7e8837335/resourcegroups/hi6...'. Below it is a dropdown menu with options 'Upload files or folder' (selected), 'Upload files', and 'Upload folder'. A red circle highlights the 'Upload files' option. To the right, there's an 'Information' section with 'What file types can I use?' (supported formats: delimited, Parquet, JSON Lines, plain text) and 'Where are files uploaded?' (files will be uploaded to the selected datastore and made available in your workspace). Navigation controls at the bottom include 'Back', a red-circled 'Next' button, and 'Cancel'.

6. Select ‘Real estate.csv’ from your computer.



7. Click to ‘Next’



8. Click to ‘Create’

Azure AI | Machine Learning Studio

Create data asset

Review
Review the settings for your data asset and make any changes as needed.

Data type

- Name: Real_Estate
- Description: --
- Type: file

Data source

- Type: Local

File selection

- Upload path: azureml://subscriptions/ef9c685b-211a-4243-8e11-b7a7e8837335/resourcegroups/hi6039rg/workspaces/Hi6039Lab/datastores/workspaceblobstore/paths/UI/2024-04-23_195059_UTC/Real estate.csv

Storage

- Datastore type: AzureBlob
- Datastore name: workspaceblobstore

Buttons: Back, Create (circled), Cancel

9. Click to ‘Data’, you can see the dataset has been created.

Azure AI | Machine Learning Studio

LODS-Prod-MSLearn-MCA > Hi6039Lab > Data

Data

Data assets

Data assets are immutable references to your data that can be created from datastores, local files, public URLs, or Open Datasets. Data assets created with AzureML v2 APIs cannot be deleted, but you can up-version or archive them for easy referencing and reuse in machine learning tasks. Deleting data assets created with v1 APIs will permanently delete the data asset and all metadata. [Learn more about data assets](#)

Actions: + Create, Refresh, Archive, Reset view, Show latest version only, Include archived, View my data

Name	Source	Version	Created on	Modified on	Type	Properties
Real_Estate	This workspace	1	Apr 24, 2024 5:52 AM	Apr 24, 2024 5:52 AM	Folder	

Assets (Data highlighted)

- Notebooks
- Automated ML
- Designer
- Prompt flow
- Jobs
- Components
- Pipelines
- Environments
- Models
- Endpoints

Manage

- Compute
- Monitoring
- Data Labeling