Pragyan 2023

Digital Twin Workshop

Hands on session

March 2023

www.brillio.com

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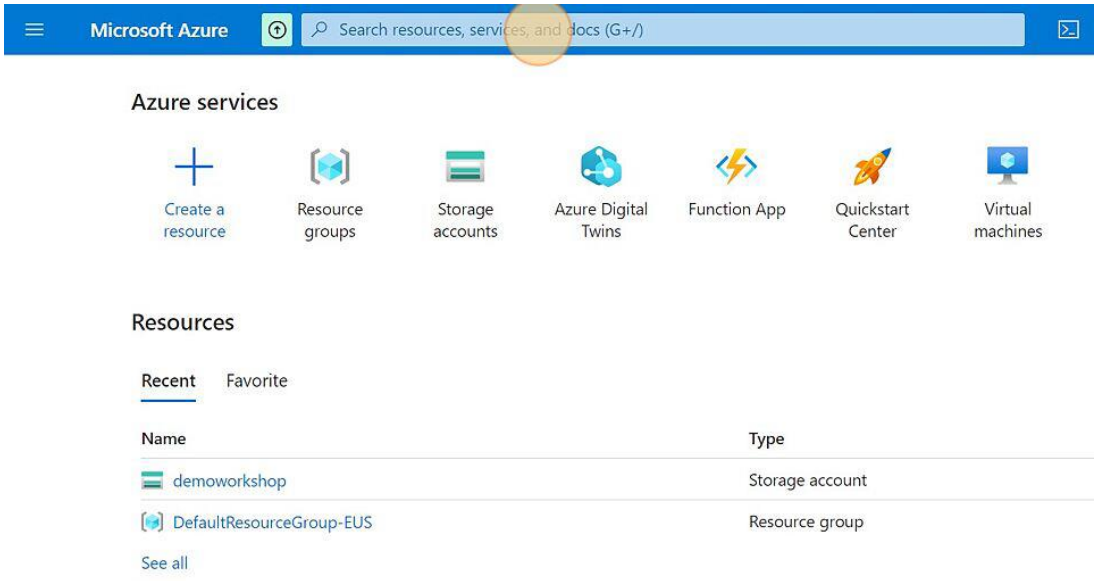
1 Azure Digital Twin Hands on Instructions

1.1 Pre-requisite

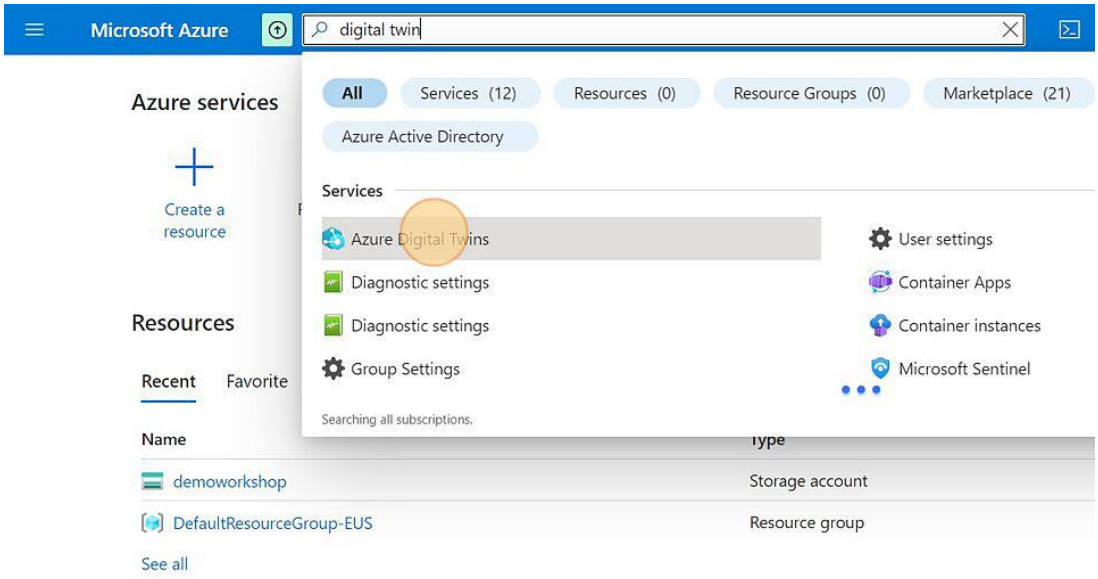
- Download hands on pre-requisite files from Github link: https://github.com/kumarvaibhav7/Workshop-Assets
- Login to https://portal.azure.com/ with your azure id.

1.2 Creating Digital Twin Instance

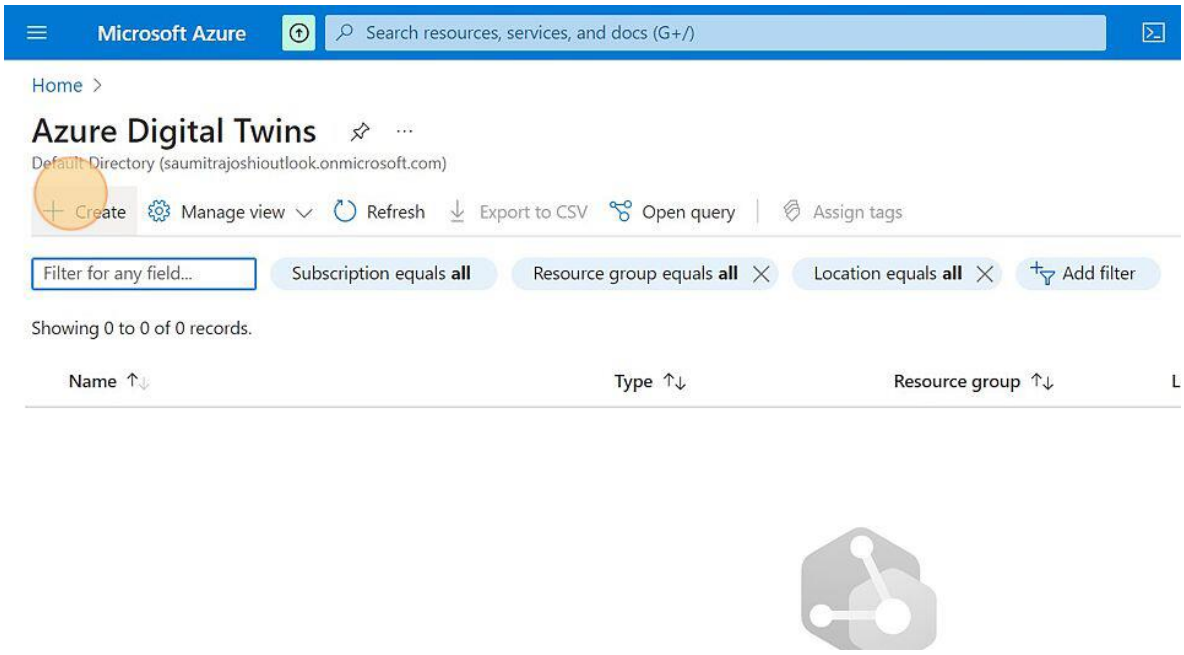
- Click and search for "digital twin" the "Search resources, services, and docs (G+/)" field.



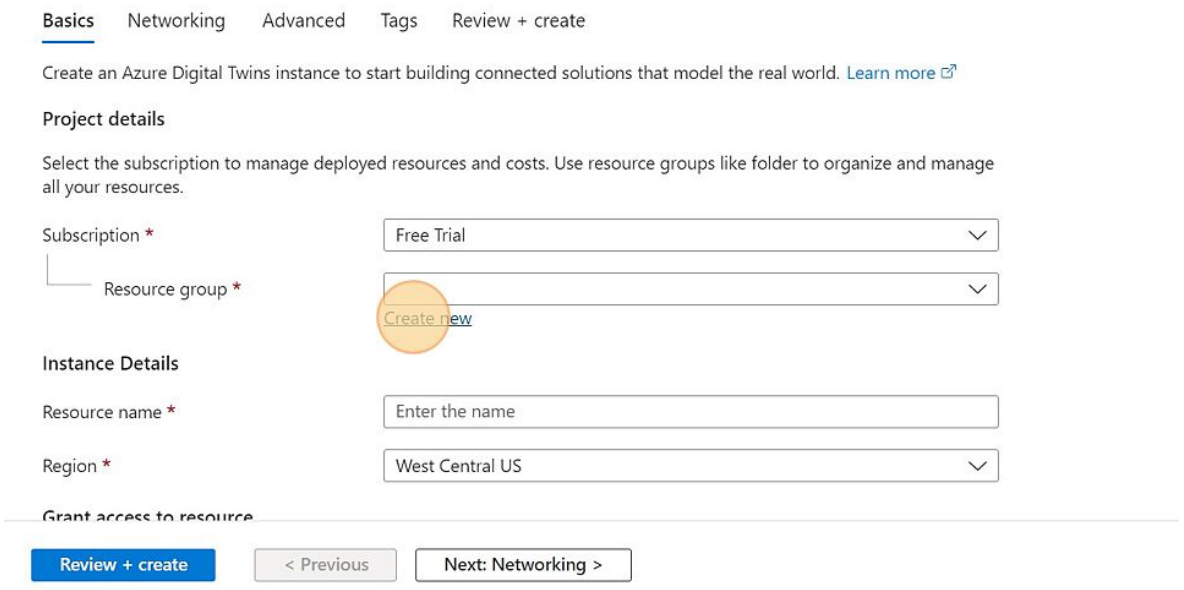
- Click "Azure Digital Twins".



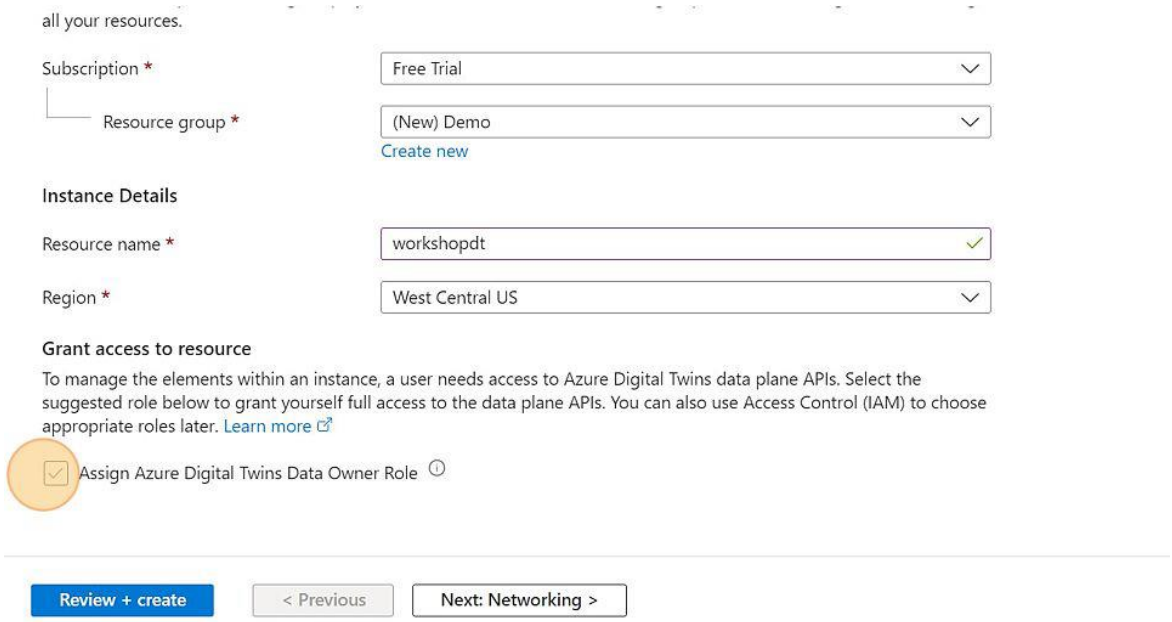
- Click on "Create".



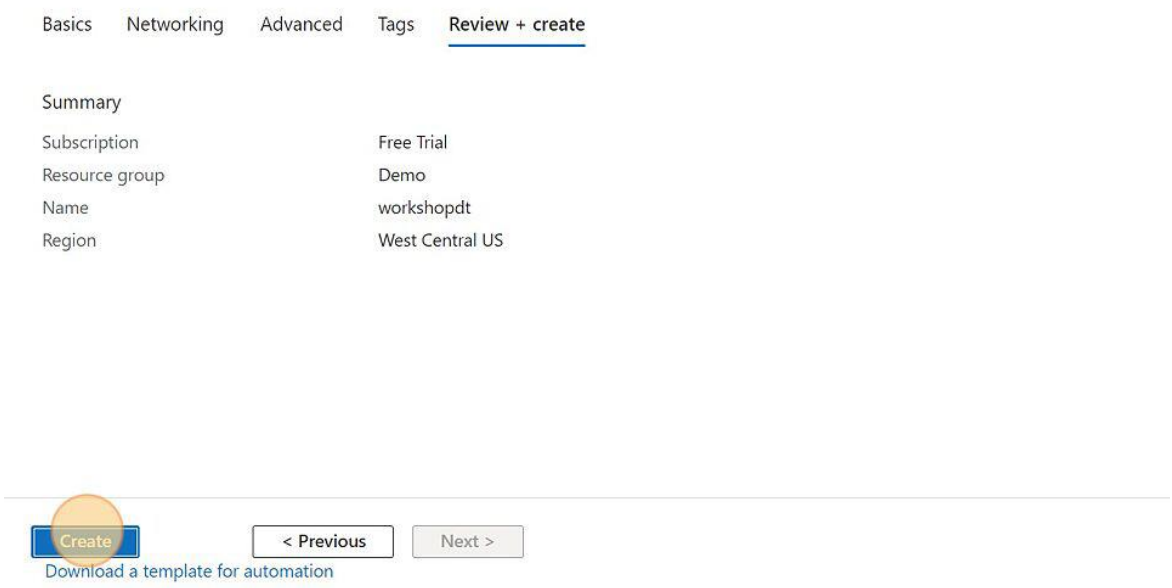
- Click on "Create New" in Resource Group option and type "Demo" and select OK. Write "workshopdt" in the Resource Name field.



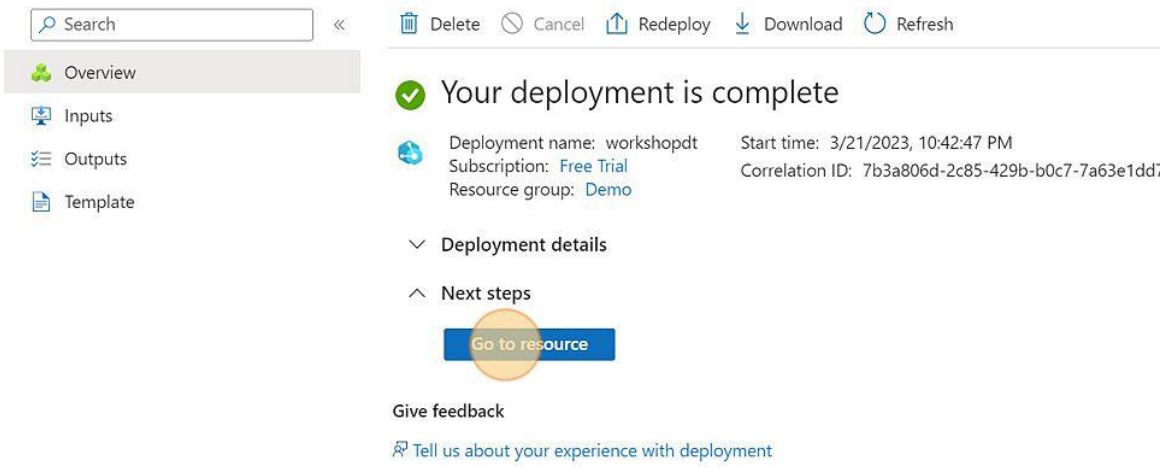
- Click here to assign yourself Data Owner Role to the digital twin and click on "Review+Create".



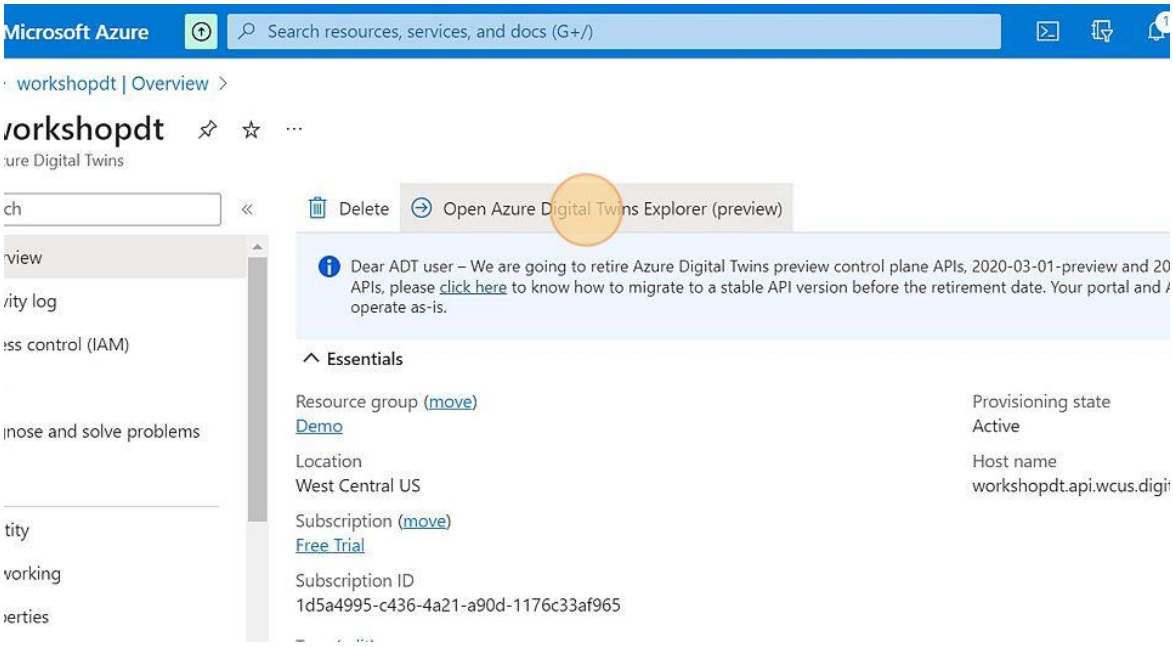
- Click on "Create".



- After deployment is completed click on "Go to Resource".

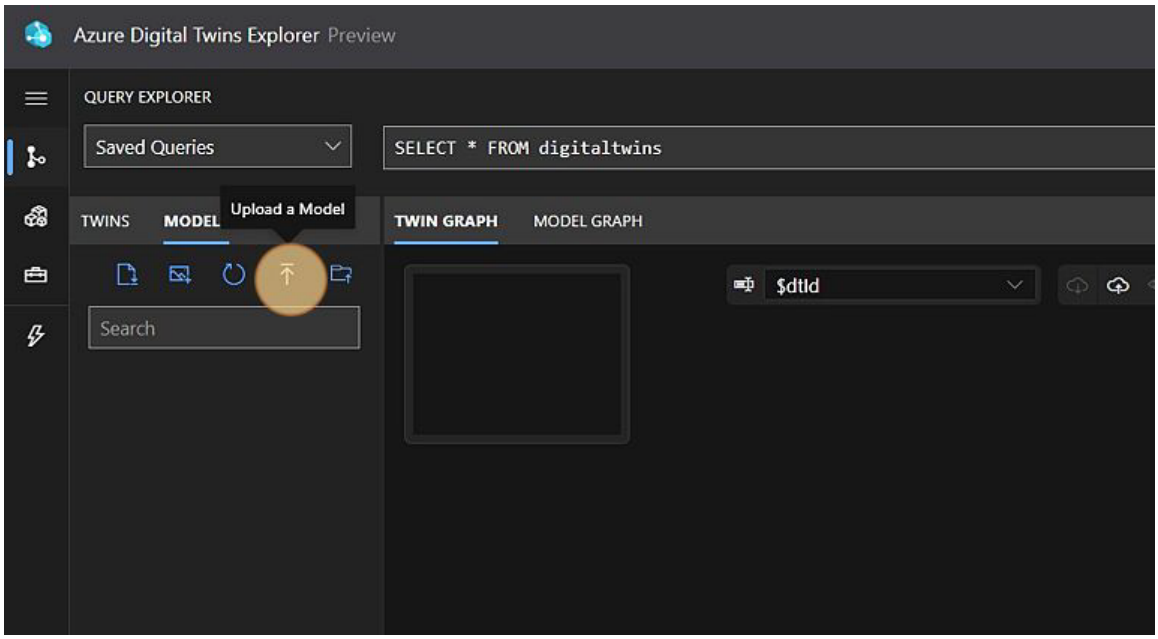


- Click on "Open Azure Digital Twins Explorer".

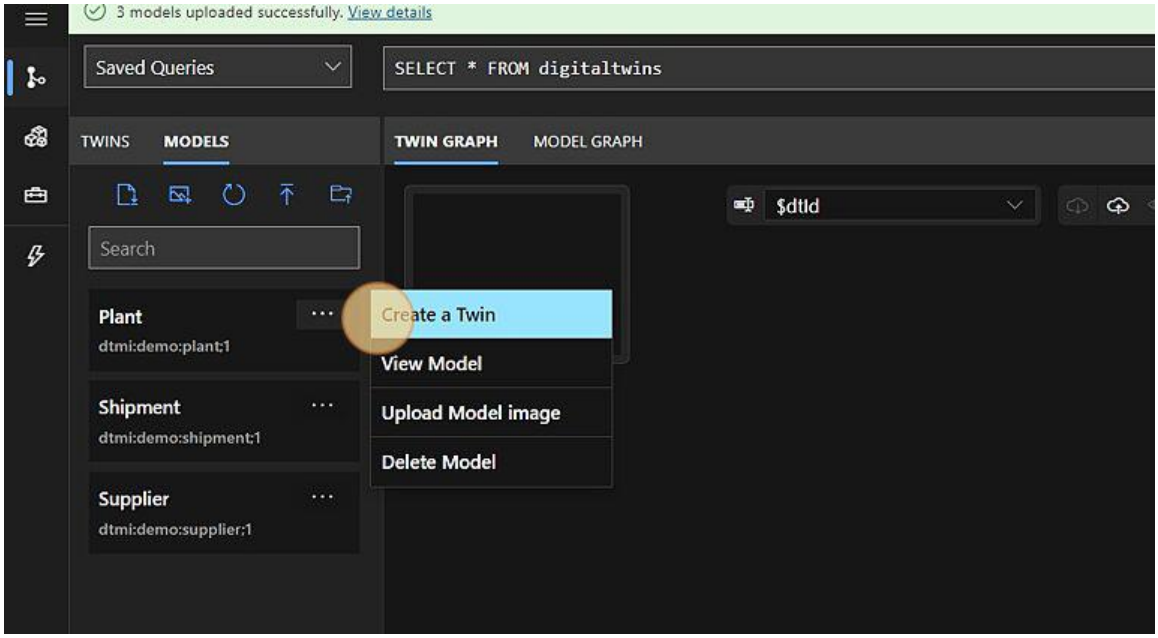


1.3 Creating model and twins in Digital Twins Explorer

- Select the upload icon in the model section to upload the models.



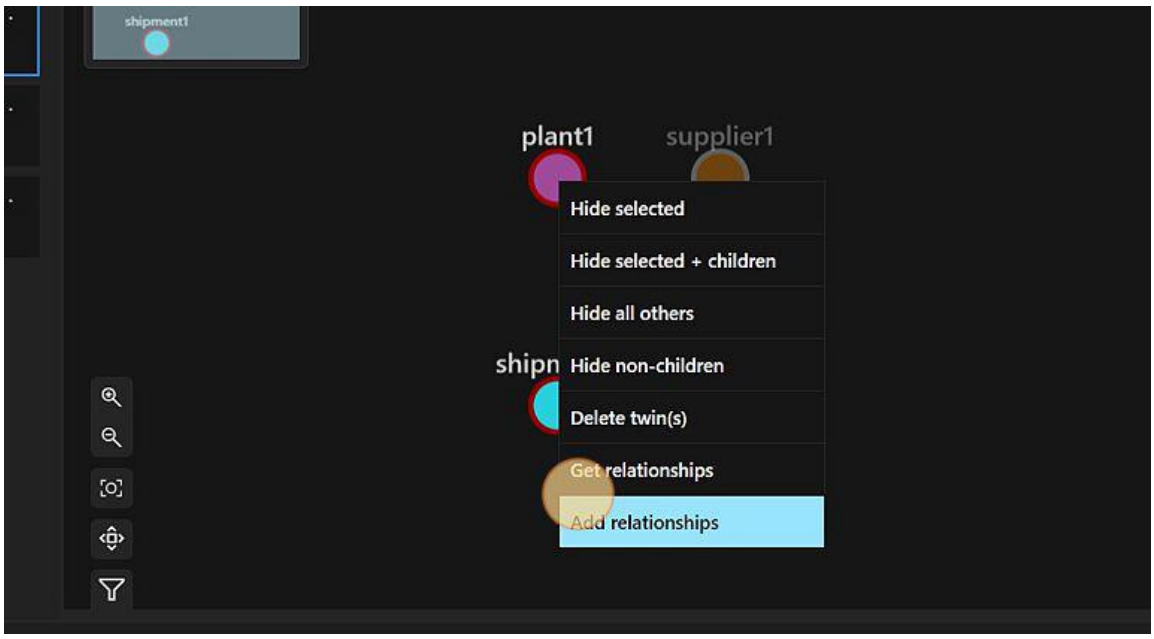
- Click here and select "Create a twin" option on the list. Type "plant1" as twin name on the popup.



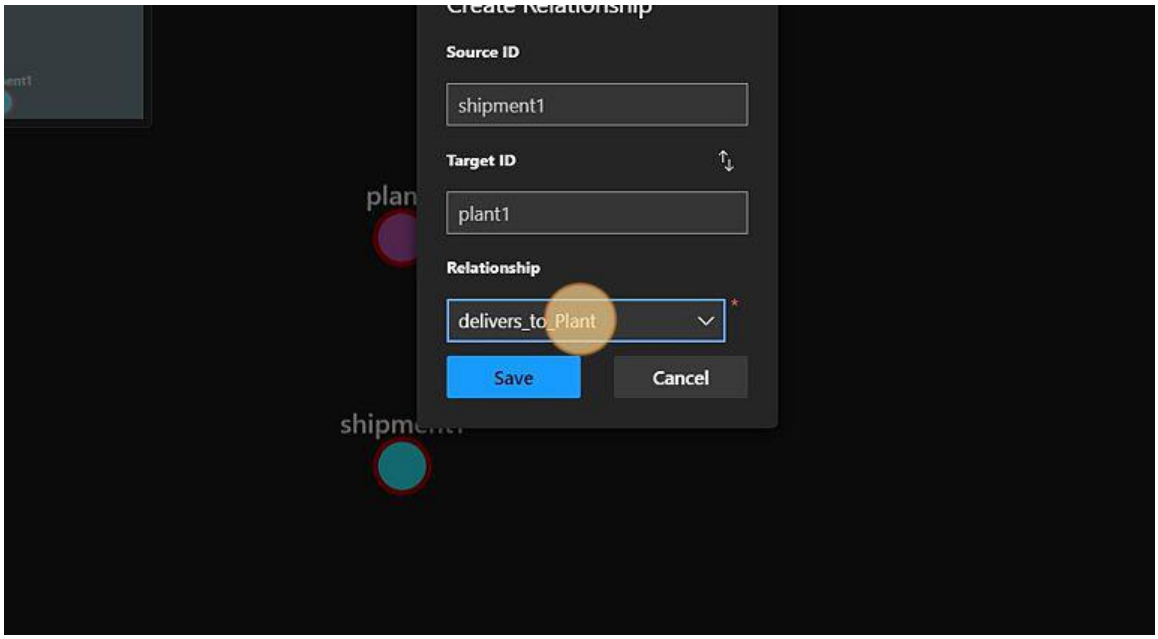
- Do the same steps for all models.
  Note. Use "shipment1" name for shipment twin and "supplier1" for supplier twin.

1.4 Creating Relationship between twins

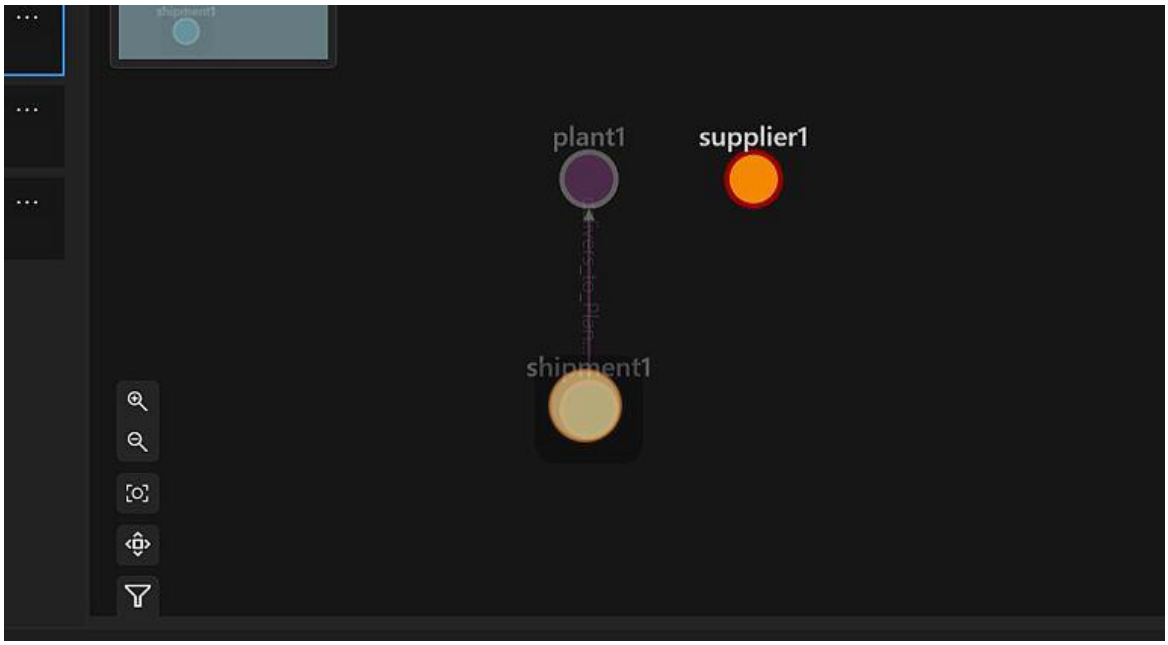
- Select "shipment1" and "plant1" twin and right click to open dropdown list. Select "Add relationships".



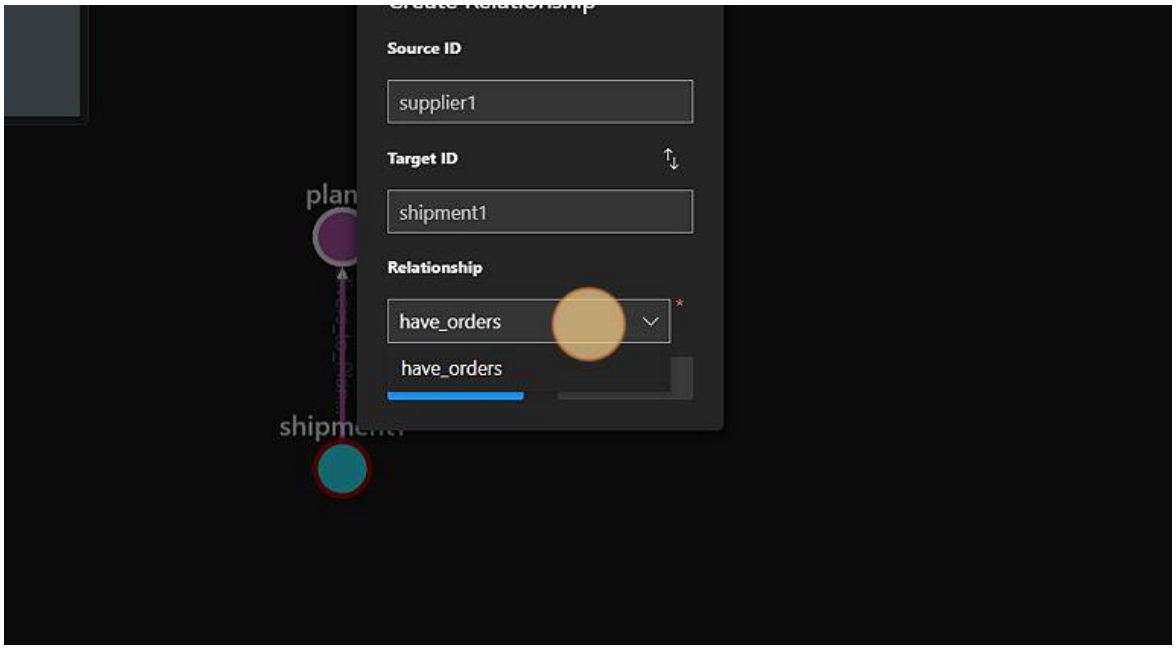
- Select the appropriate relationship and click "Save".



- Select "supplier1" and "shipment1" twin and right click to open dropdown list. Select "Add relationships".

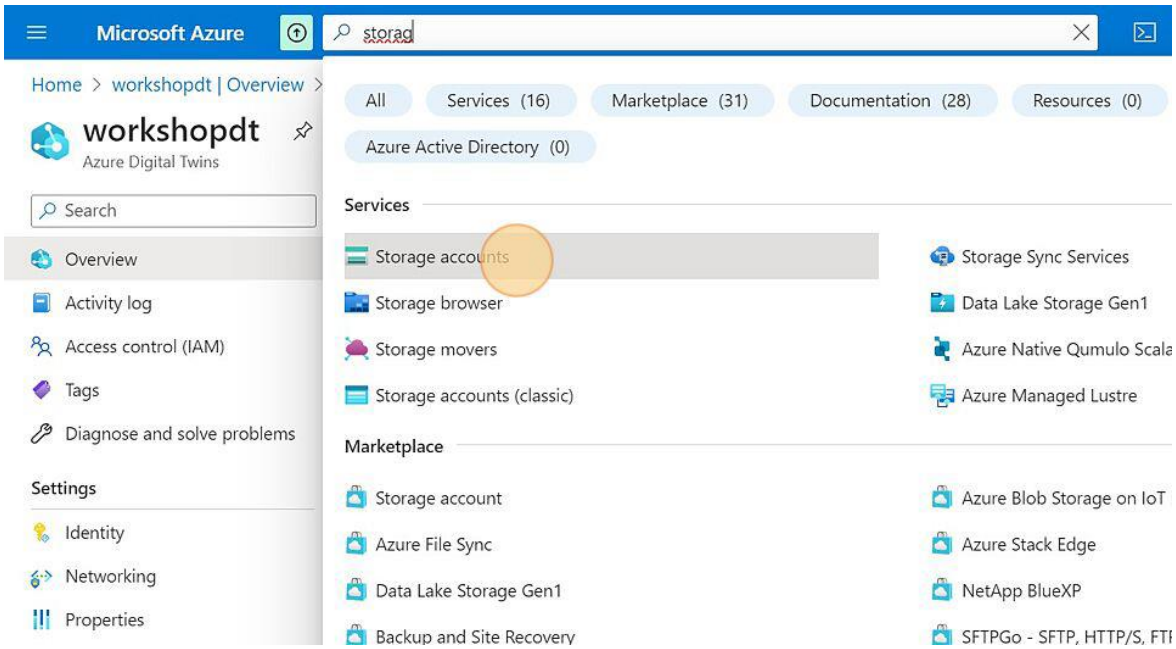


- Select the appropriate relationship and click "Save".

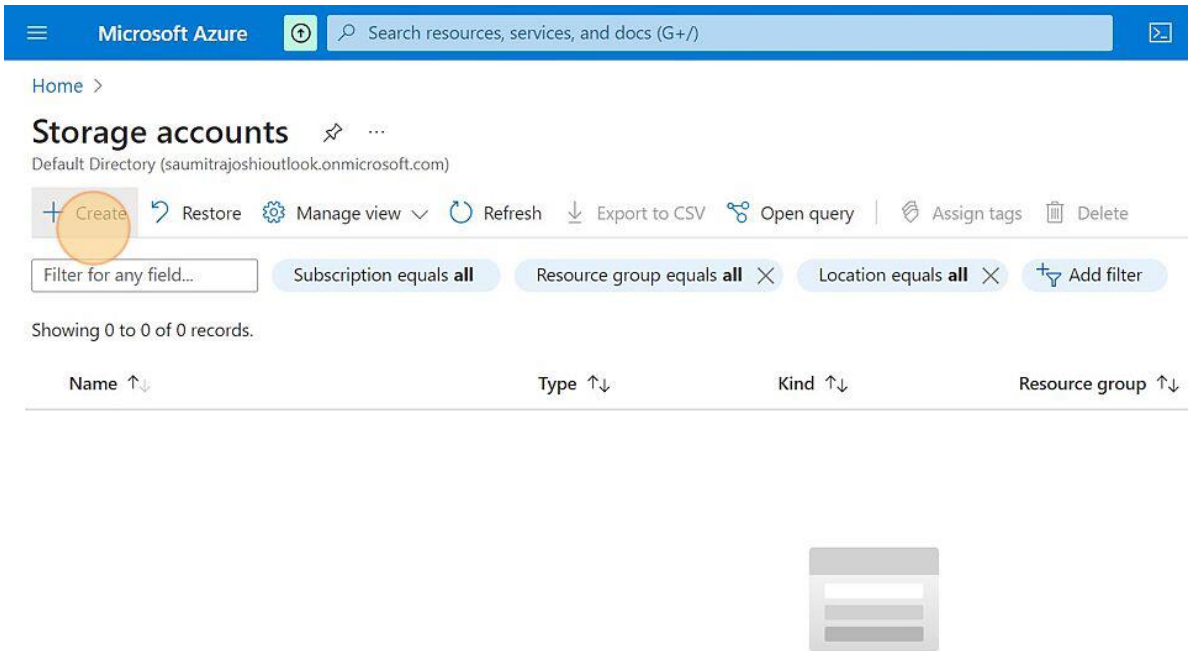


1.5 Creating Storage Account and Container for storing 3D models

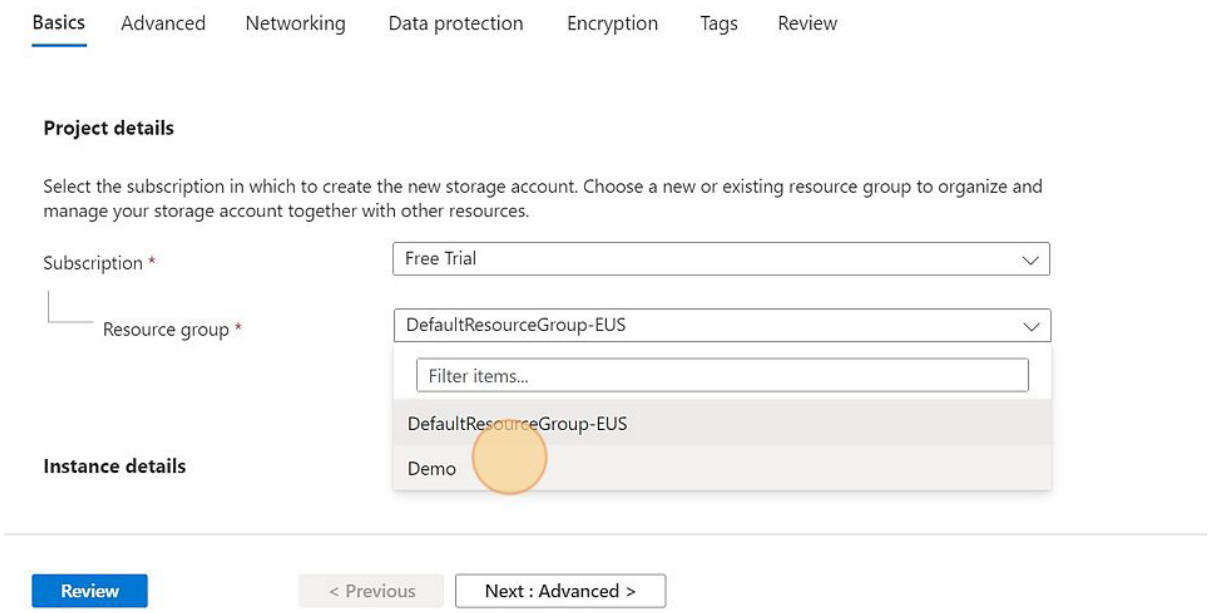
- Go back to azure console and search for "Storage accounts".



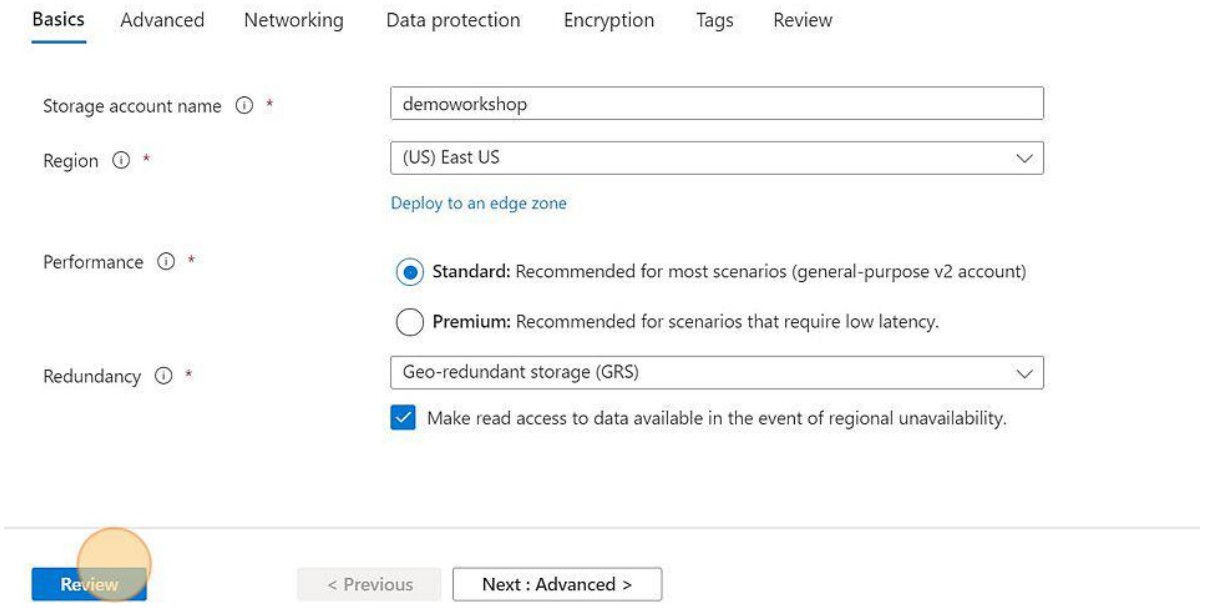
- Click on "Create".



- Select "Demo" in the Resource Group option.

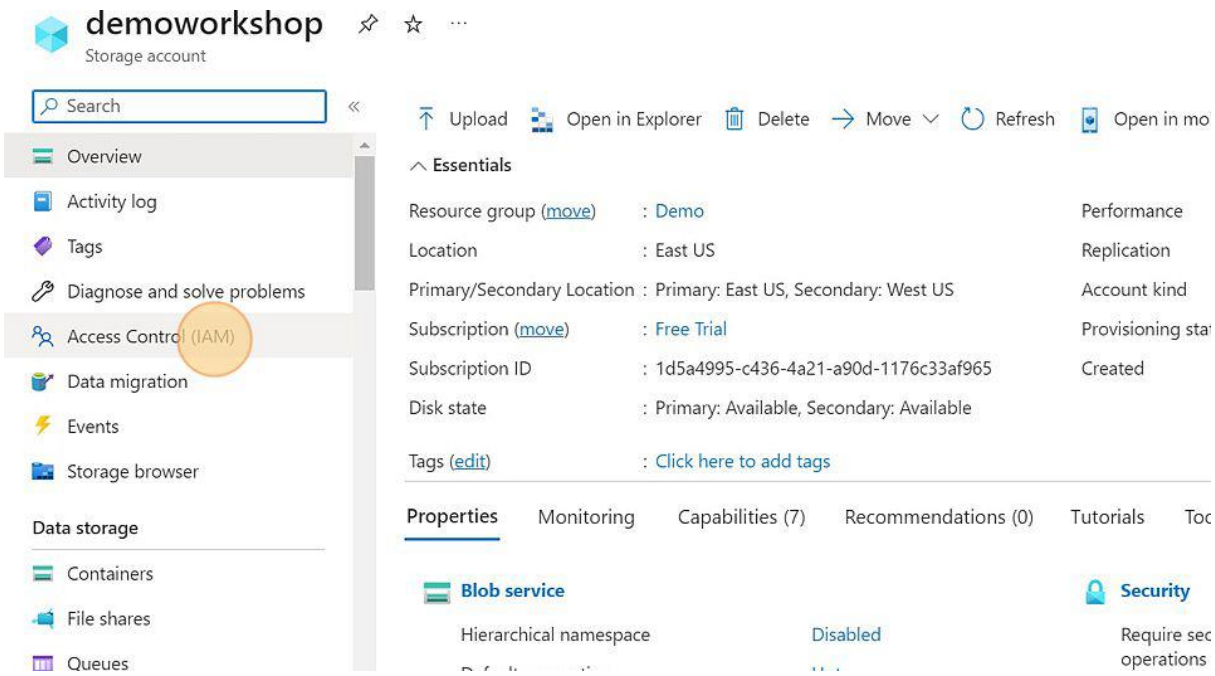


- Set "demoworkshop" as Storage Account Name and click on "Review".

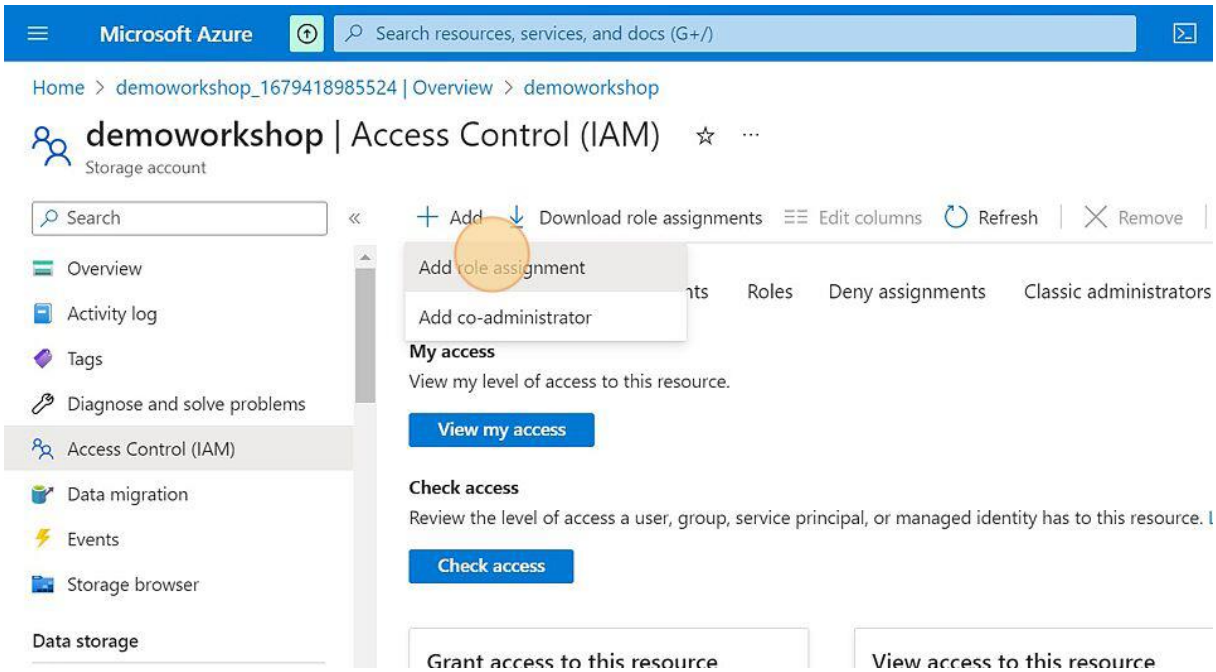


- Click on "Create" and after the deployment is complete, click on "Go to Resource".

- Select "Access Control (IAM)" option.

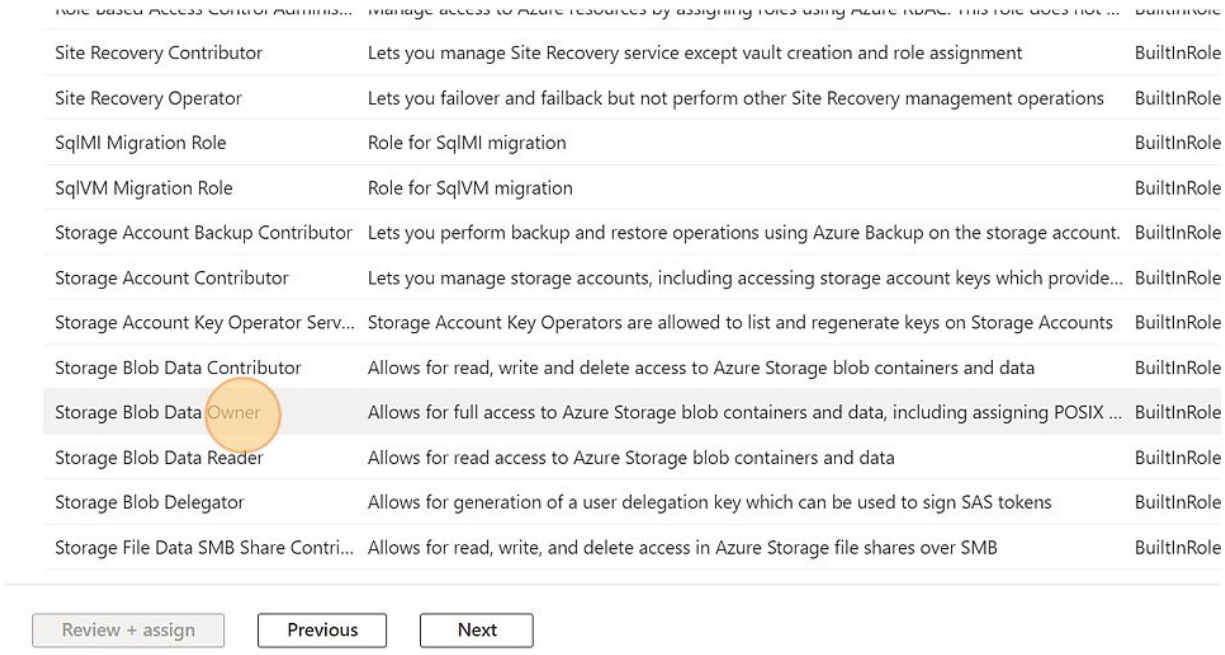


- Click on Add and select "Add role assignment".



- Click "Next".

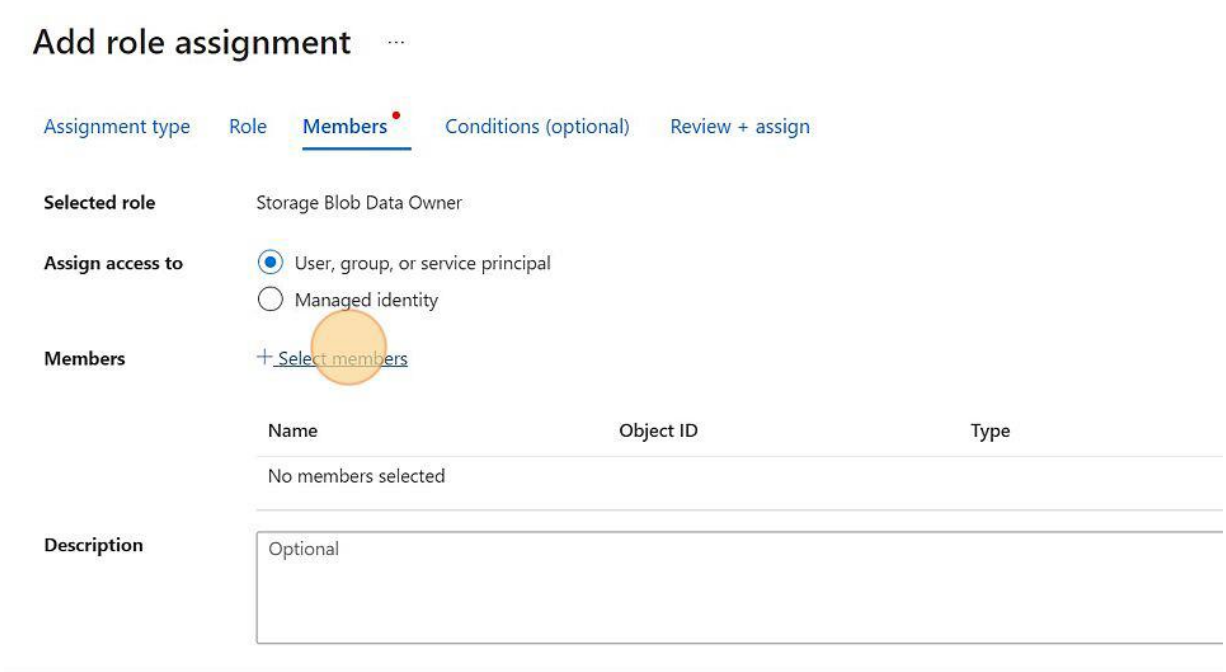
- Select "Storage Blob Data Owner" and click "Next".



Site Recovery Contributor	Lets you manage Site Recovery service except vault creation and role assignment	BuiltInRole
Site Recovery Operator	Lets you failover and failback but not perform other Site Recovery management operations	BuiltInRole
SqlMI Migration Role	Role for SqlMI migration	BuiltInRole
SqlVM Migration Role	Role for SqlVM migration	BuiltInRole
Storage Account Backup Contributor	Lets you perform backup and restore operations using Azure Backup on the storage account.	BuiltInRole
Storage Account Contributor	Lets you manage storage accounts, including accessing storage account keys which provide...	BuiltInRole
Storage Account Key Operator Serv...	Storage Account Key Operators are allowed to list and regenerate keys on Storage Accounts	BuiltInRole
Storage Blob Data Contributor	Allows for read, write and delete access to Azure Storage blob containers and data	BuiltInRole
Storage Blob Data Owner	Allows for full access to Azure Storage blob containers and data, including assigning POSIX ...	BuiltInRole
Storage Blob Data Reader	Allows for read access to Azure Storage blob containers and data	BuiltInRole
Storage Blob Delegator	Allows for generation of a user delegation key which can be used to sign SAS tokens	BuiltInRole
Storage File Data SMB Share Contri...	Allows for read, write, and delete access in Azure Storage file shares over SMB	BuiltInRole

Review + assign | Previous | Next

- In the members section click "Select Members". Enter your mail id and confirm.



Add role assignment ...

Assignment type | Role | Members | Conditions (optional) | Review + assign

Selected role Storage Blob Data Owner

Assign access to (•) User, group, or service principal ( ) Managed identity

Members + Select members

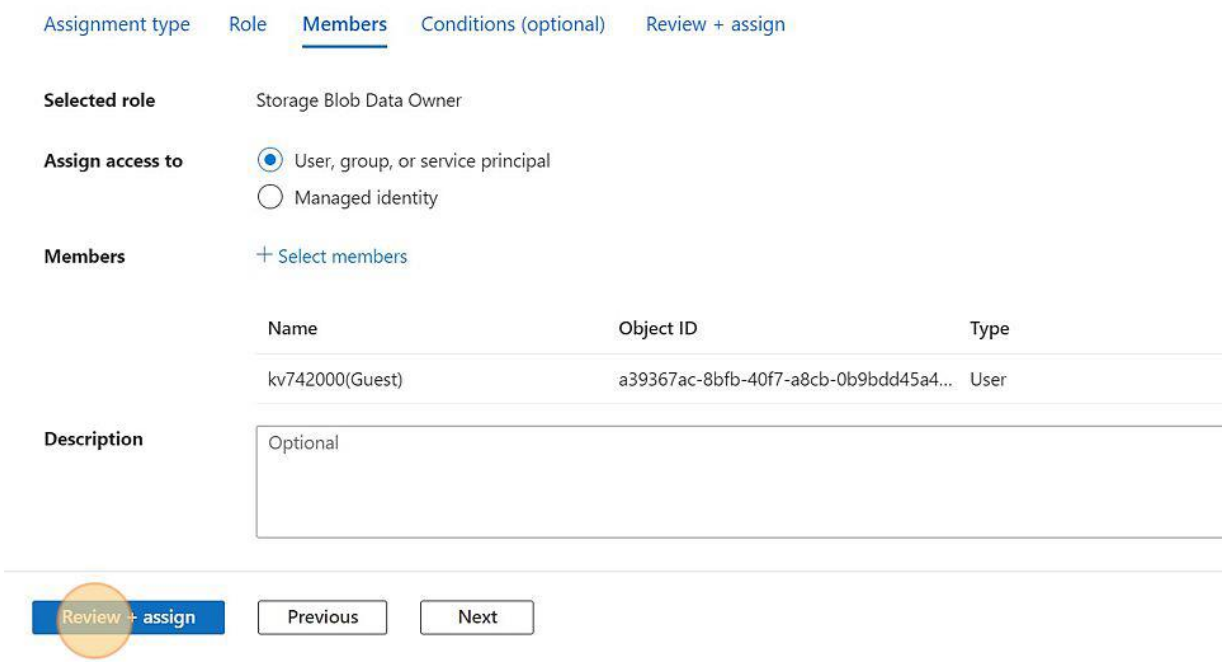
Name	Object ID	Type
No members selected		

Description Optional

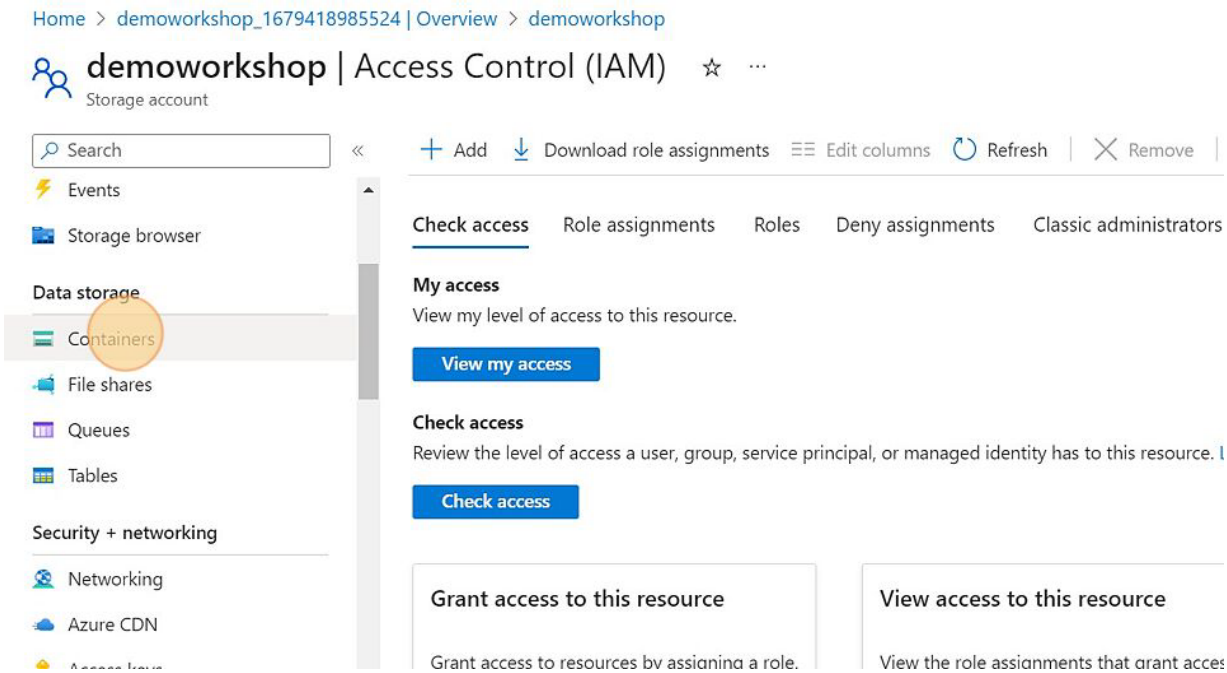
Note. The mail Id should be the same to your Azure Id.

-

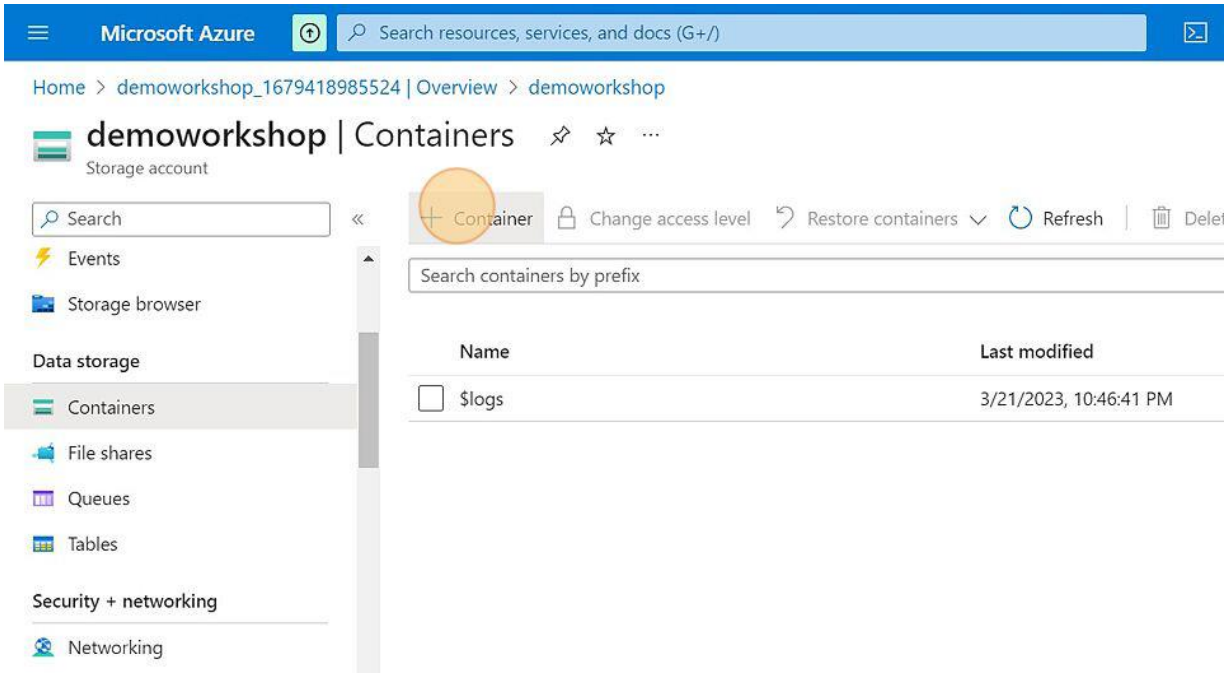
- Click "Review + Assign".



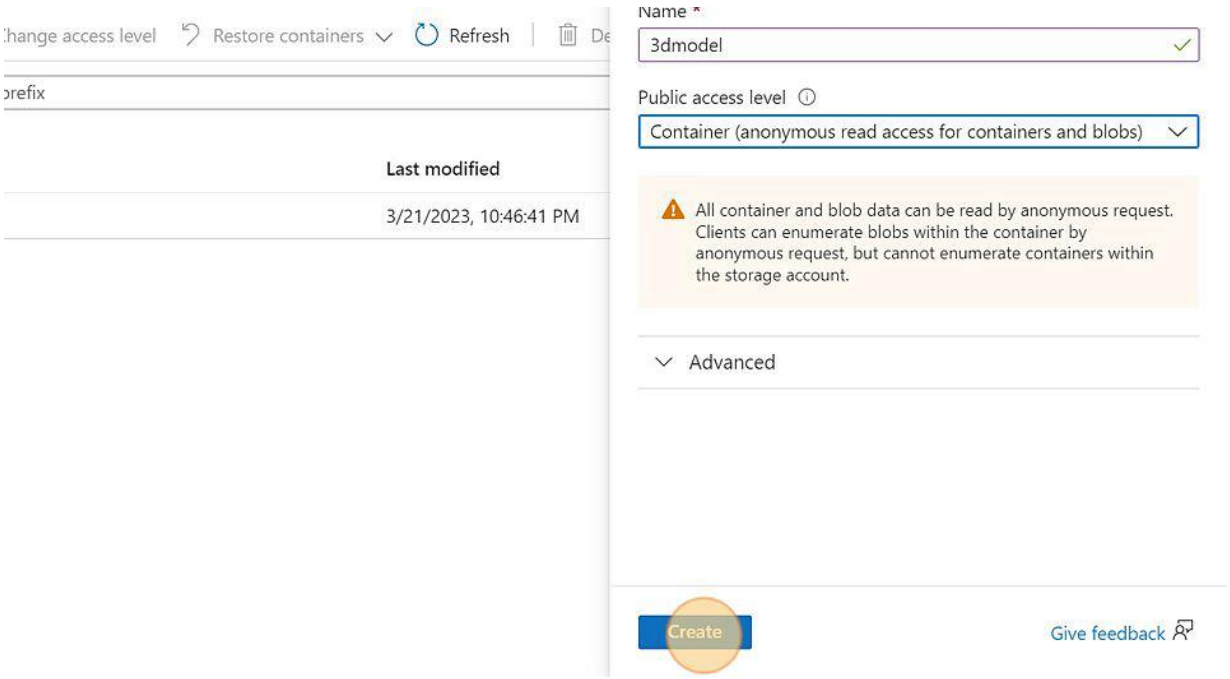
- Select "Container" option.



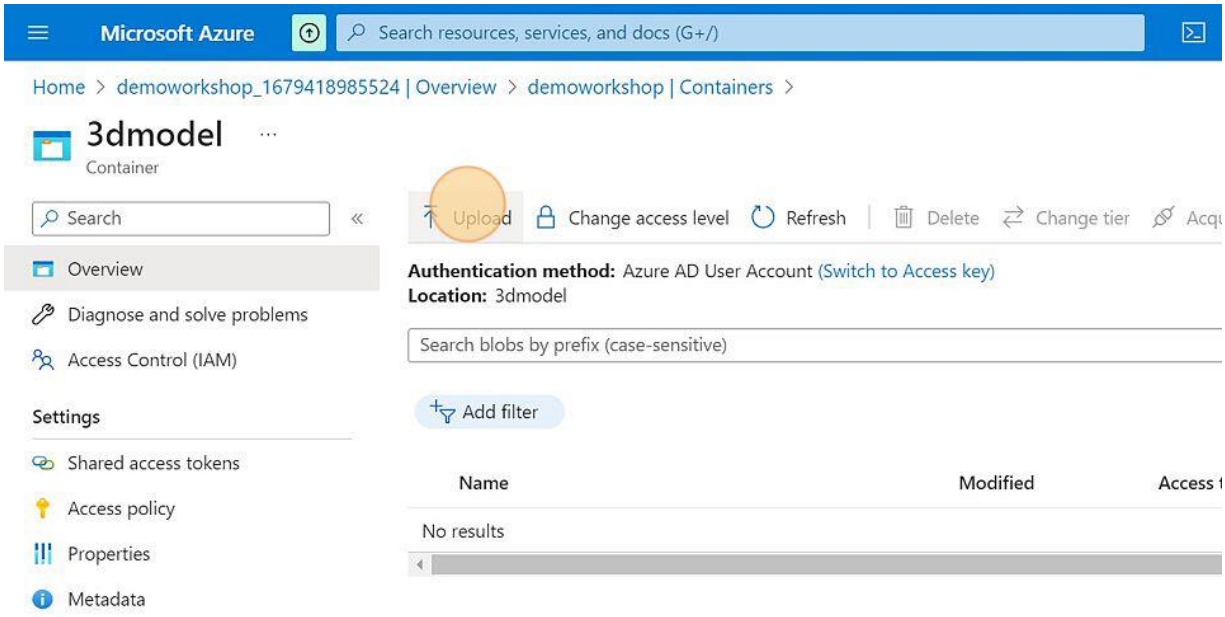
- Click on "+ Container" and type "3dmodel" as the name of container.



- In the public access level select "Container" and click "Create".



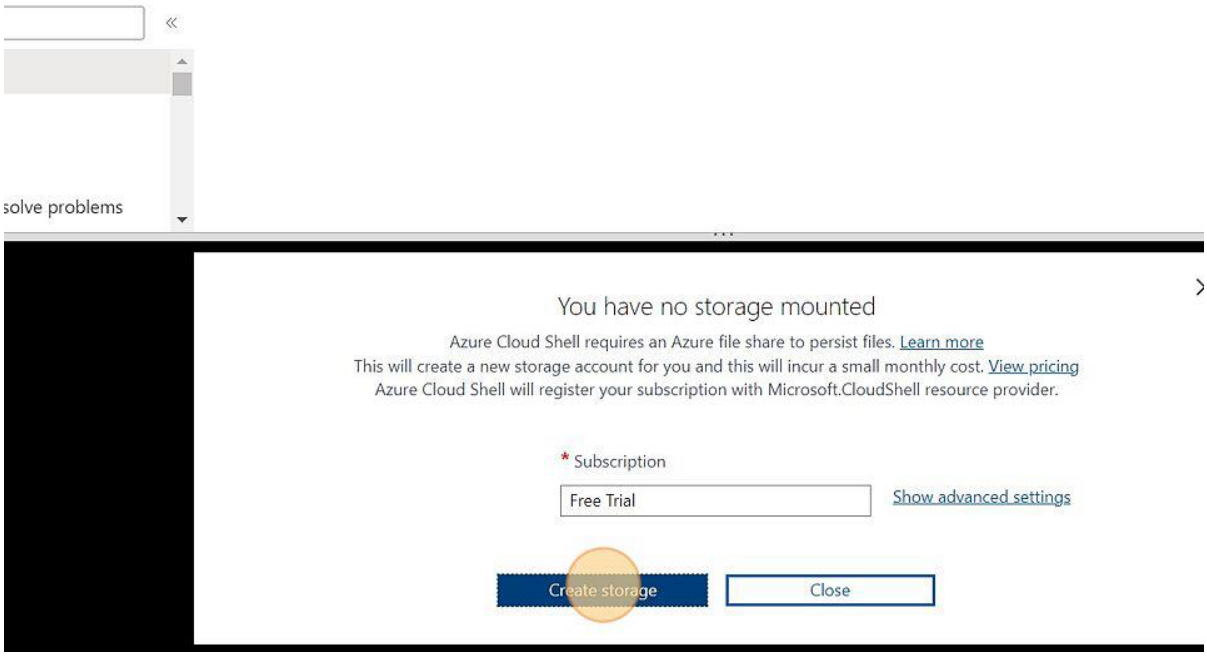
- Click on the created container and select "Upload". Upload the 3d model .glb file.



1.6 Resolving CORS issue

- Open Azure CLI.

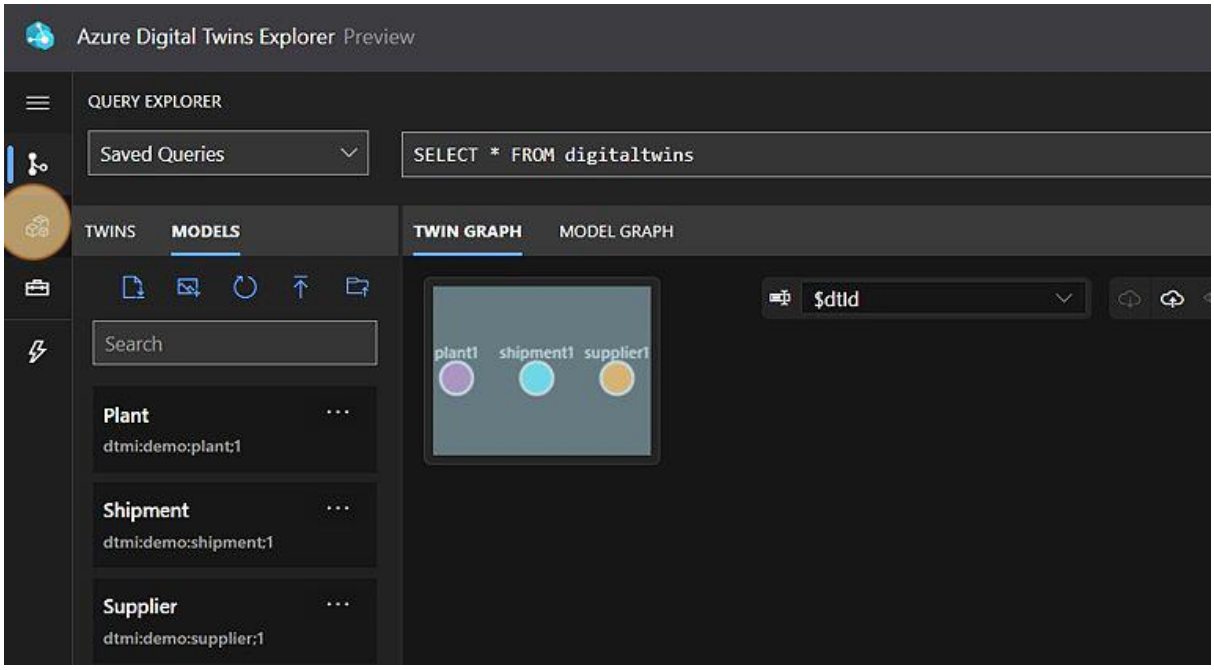
- Click “Create storage”.



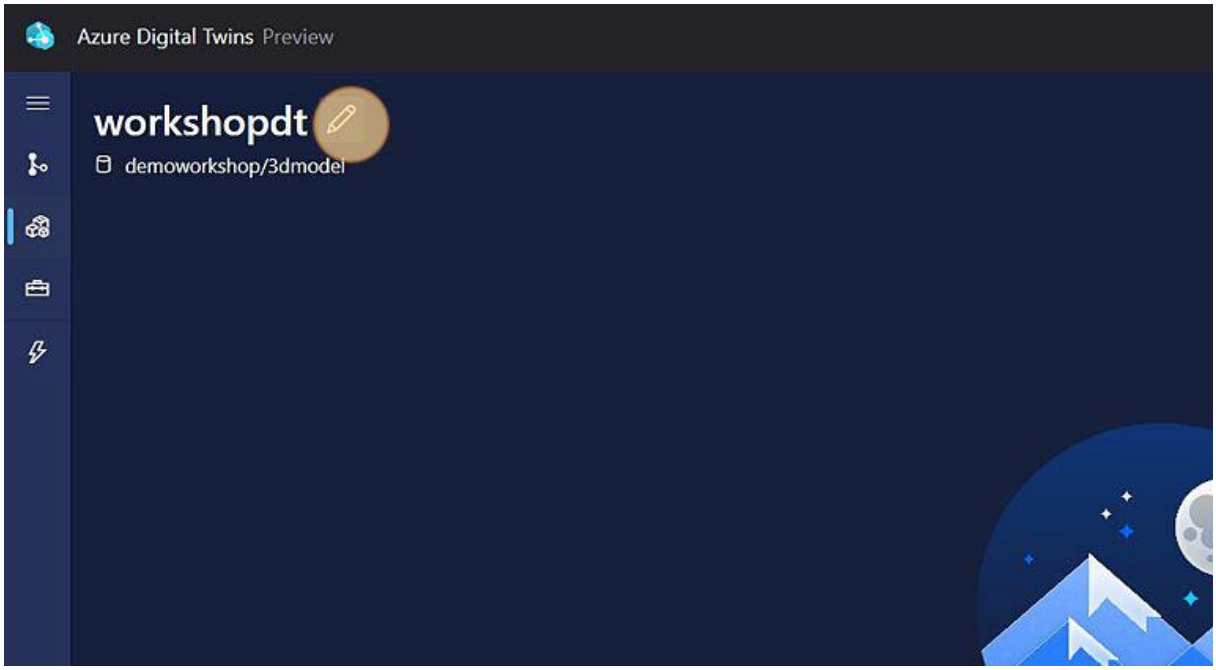
- After the terminal is initialised type the command “az storage cors add --services b --methods GET OPTIONS POST PUT --origins https://explorer.digitaltwins.azure.net --allowed-headers Authorization x-ms-version x-ms-blob-type --account-name <your-storage-account>”. Type your storage account name in place of the placeholder.

1.7 Adding 3D model and mapping Elements

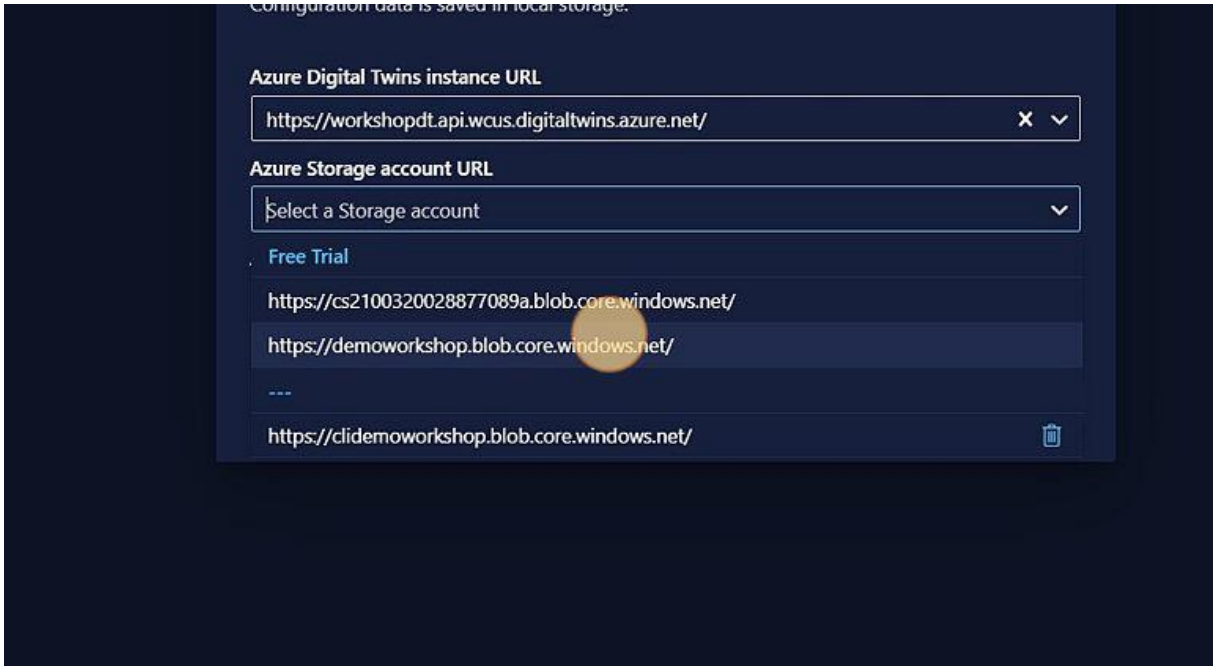
- In the digital twin Explorer, click here.



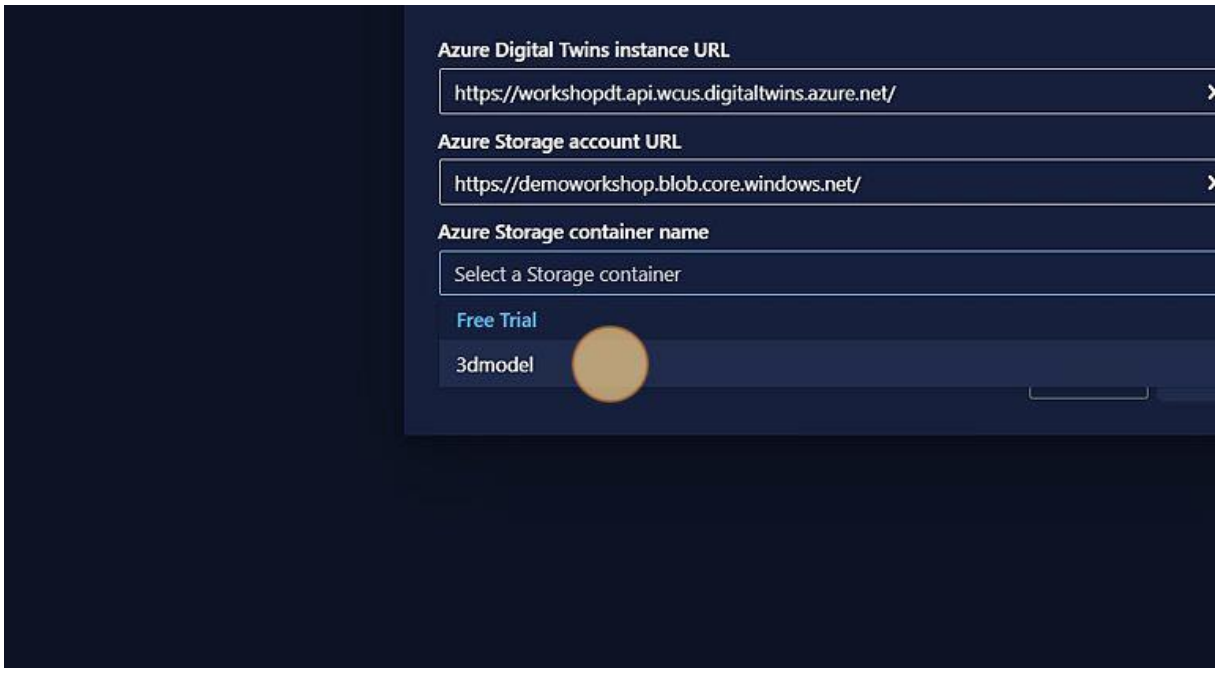
- Click on edit option.



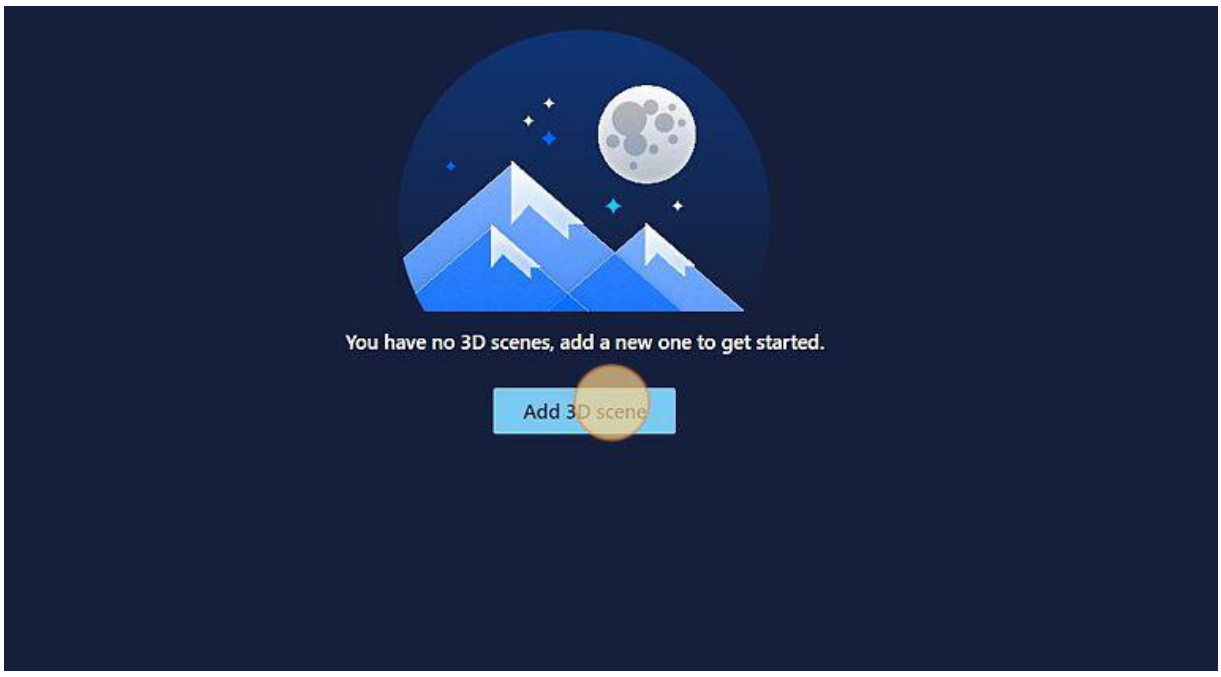
- In the Azure storage account URL select the storage account you created.



- In the Azure Storage container name select the container you just created and click "Save".



- Click "Add 3D Scene".



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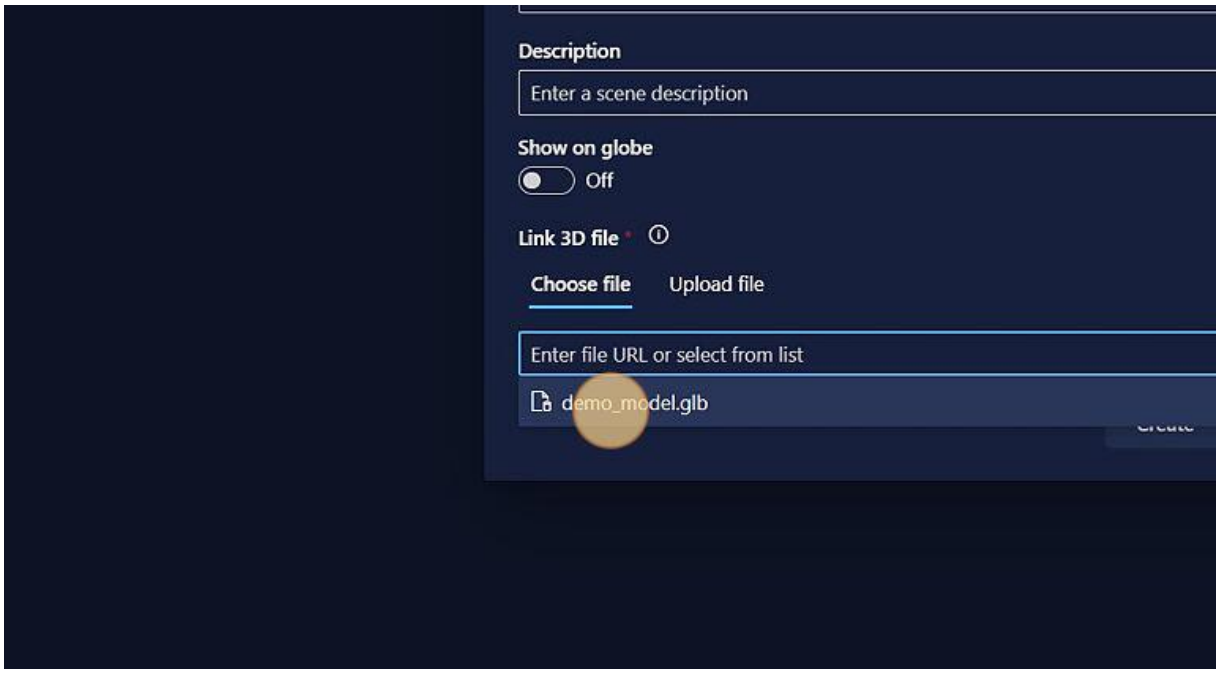
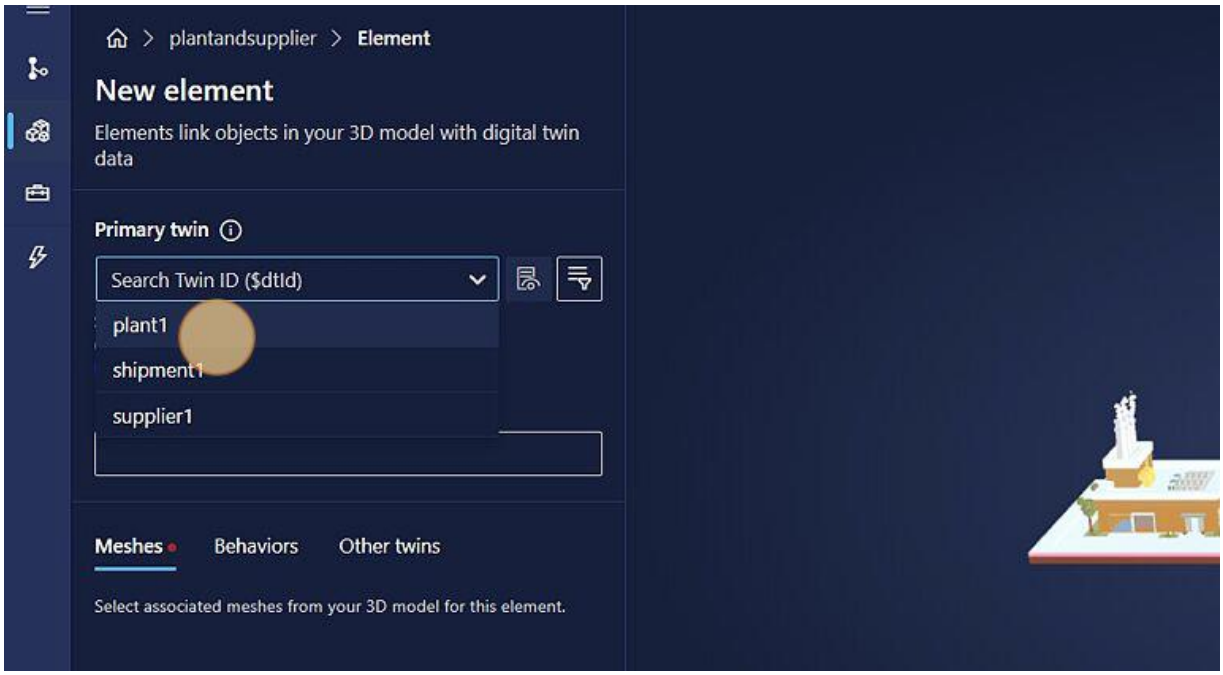
- Enter "plantandsupplier" as Name of the scene and choose the 3d file from the list and click "Create".

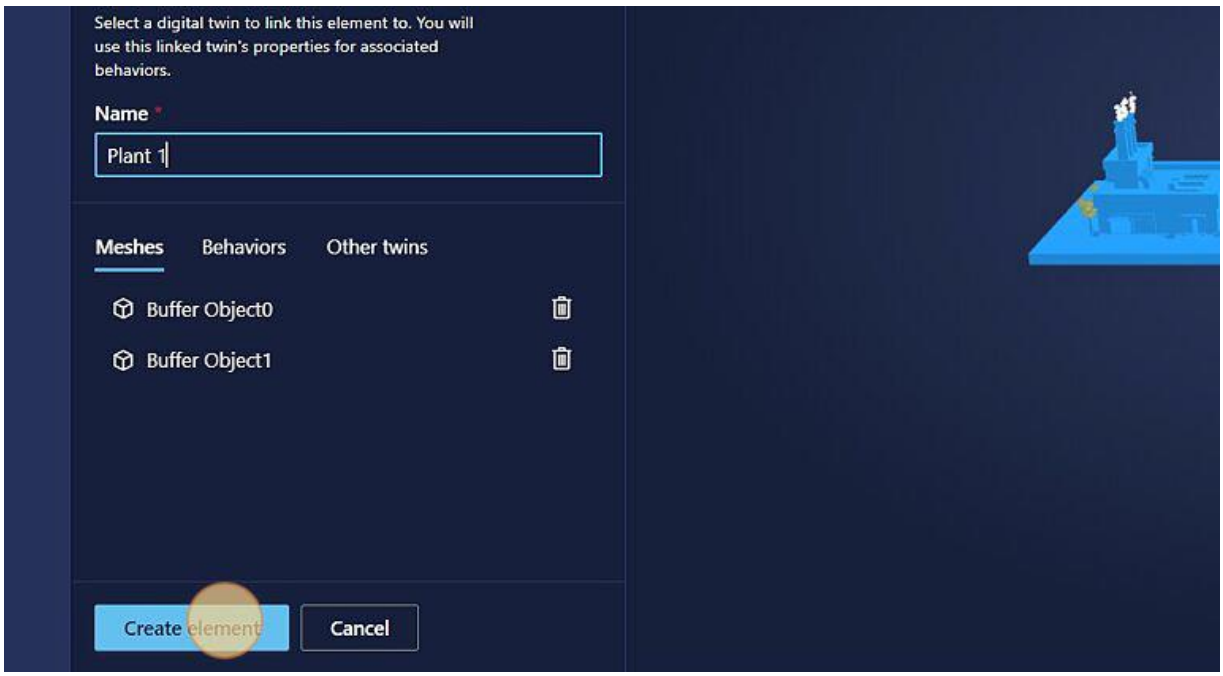


- Select the scene and wait for the model to load.
- Click on "New Element".

- Select twin to associate with 3d model. Enter "Plant 1" as name of twin. Then select the 3d model to which twin properties should be assigned.



- Click "Create Element".

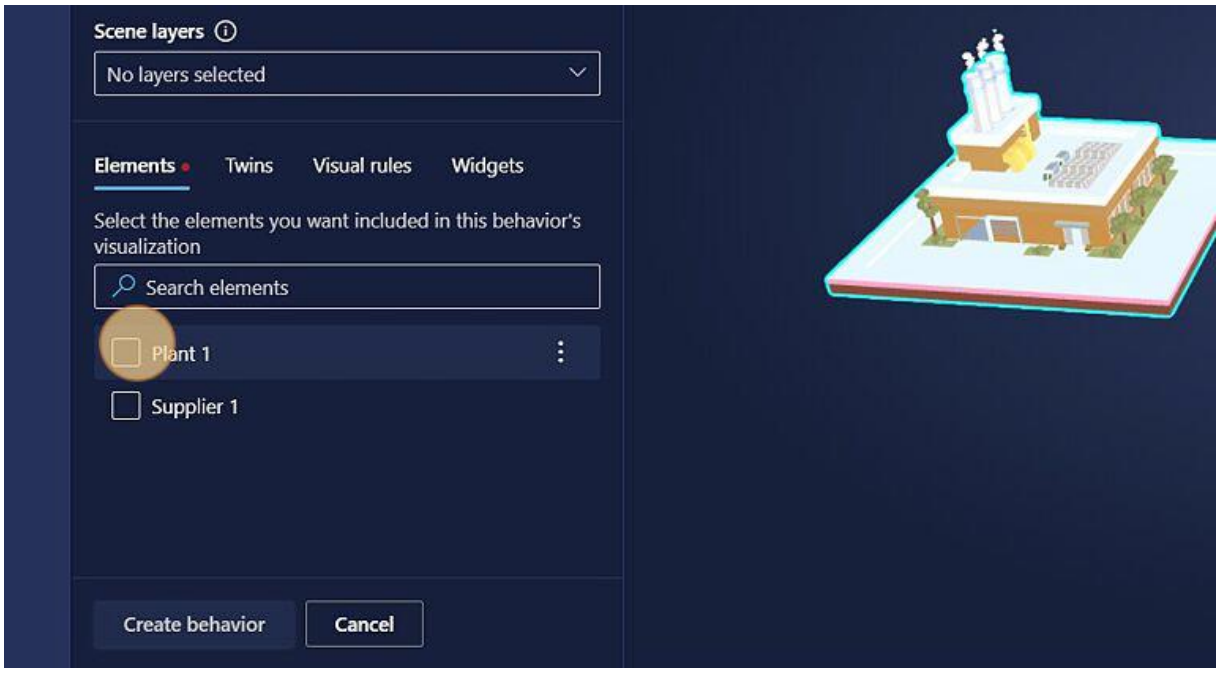


- Do same steps for supplier model. Set "Supplier 1" as the name of twin.

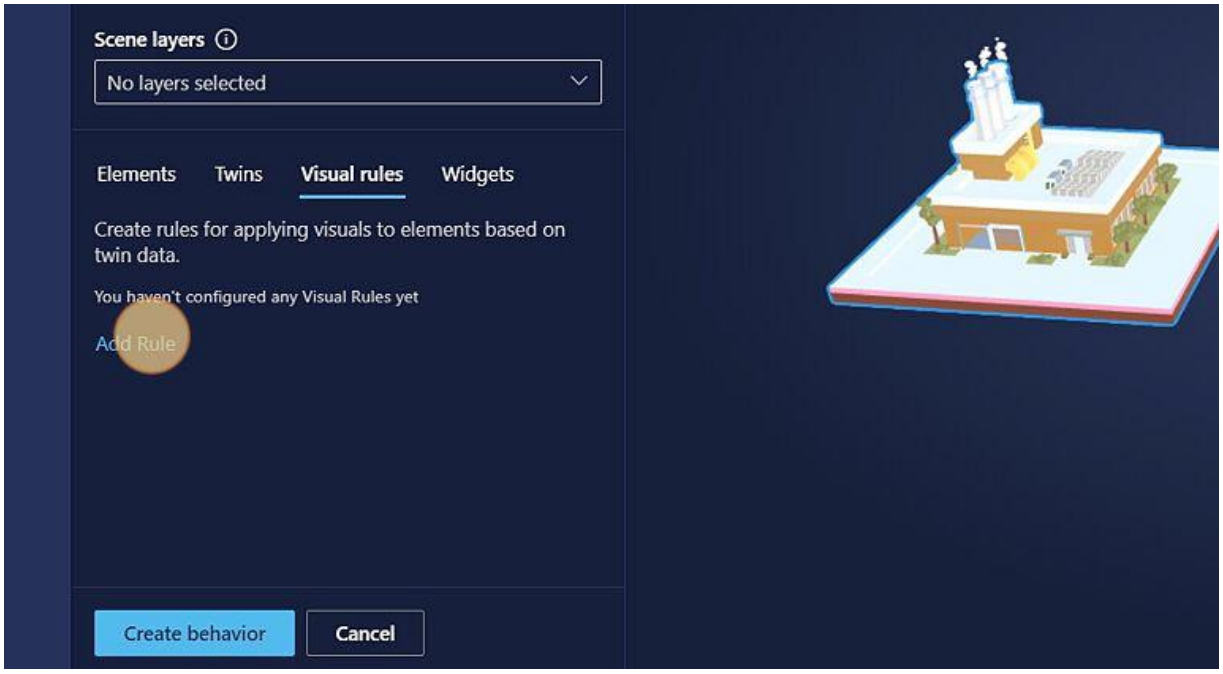
1.8 Creating a Visual Rule Behavior

- Navigate to "Behavior" section and click on "New Behavior".

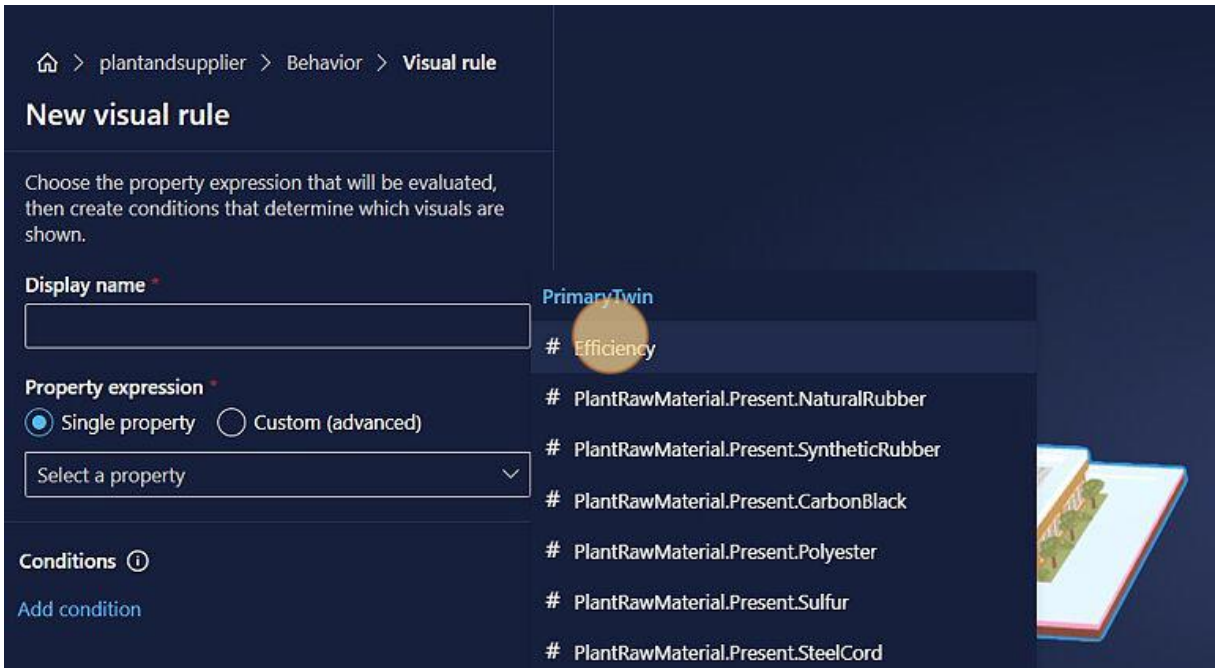
- Enter "Efficiency Rule" the Display Name and select "Plant 1" twin from the Element section.



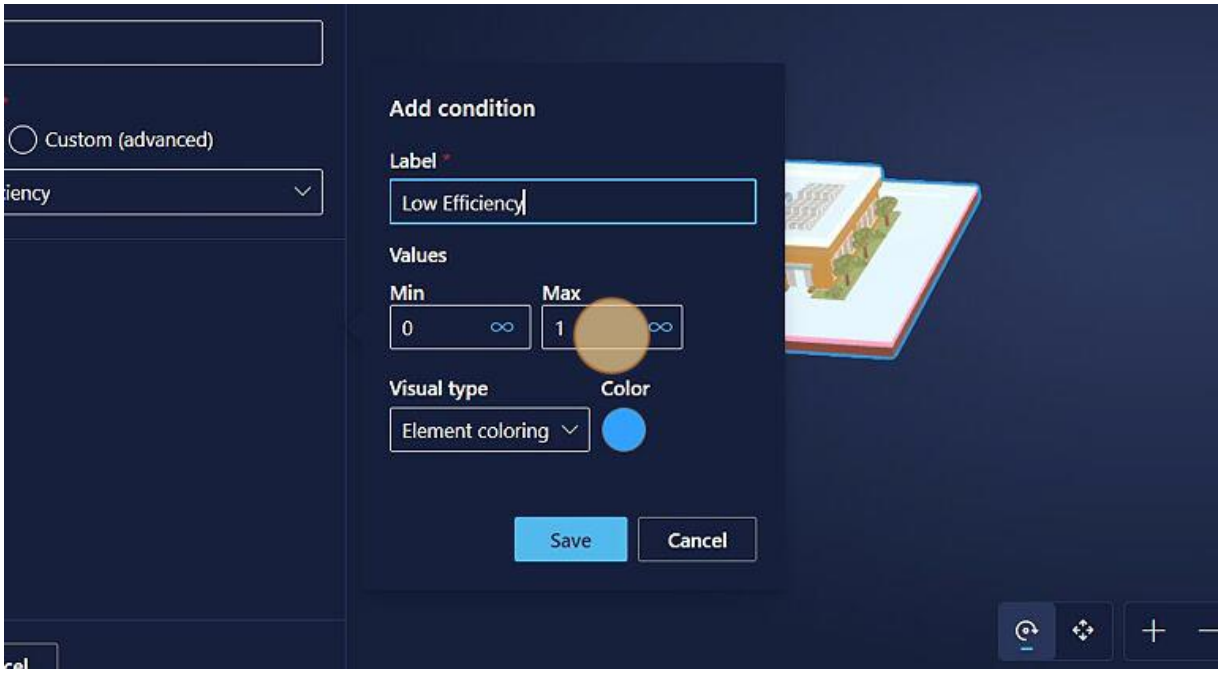
- Navigate to Visual rules and select "Add Rule".



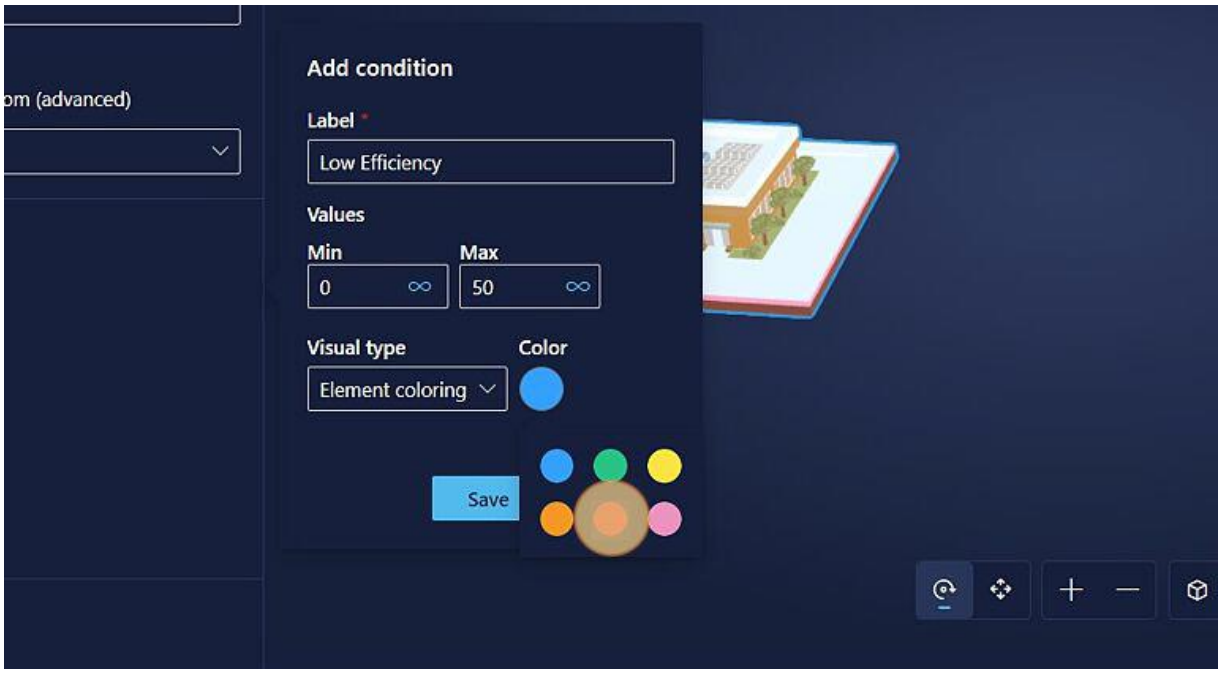
- Enter the display name and Select the Property in the Property Expression field for visual rule. In this case select "Efficiency".



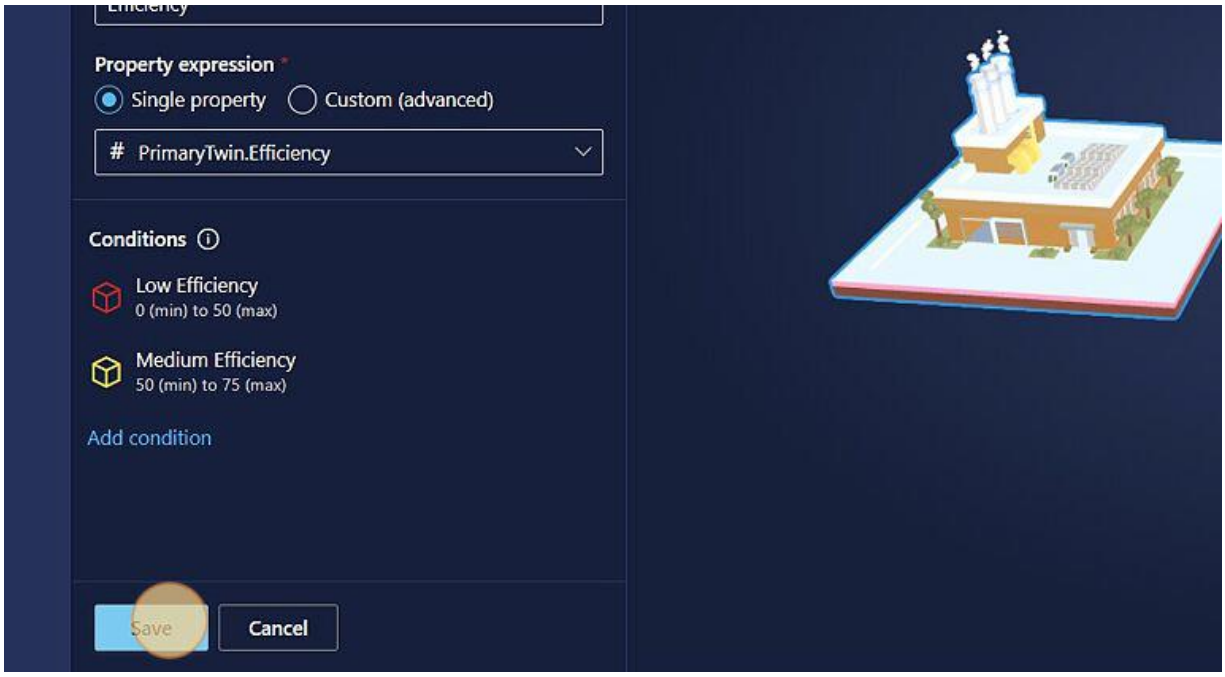
- Click "Add Condition" and enter the condition label, Min and Max value.



- For visual type select either element coloring or badges and select the appropriate color or badge.

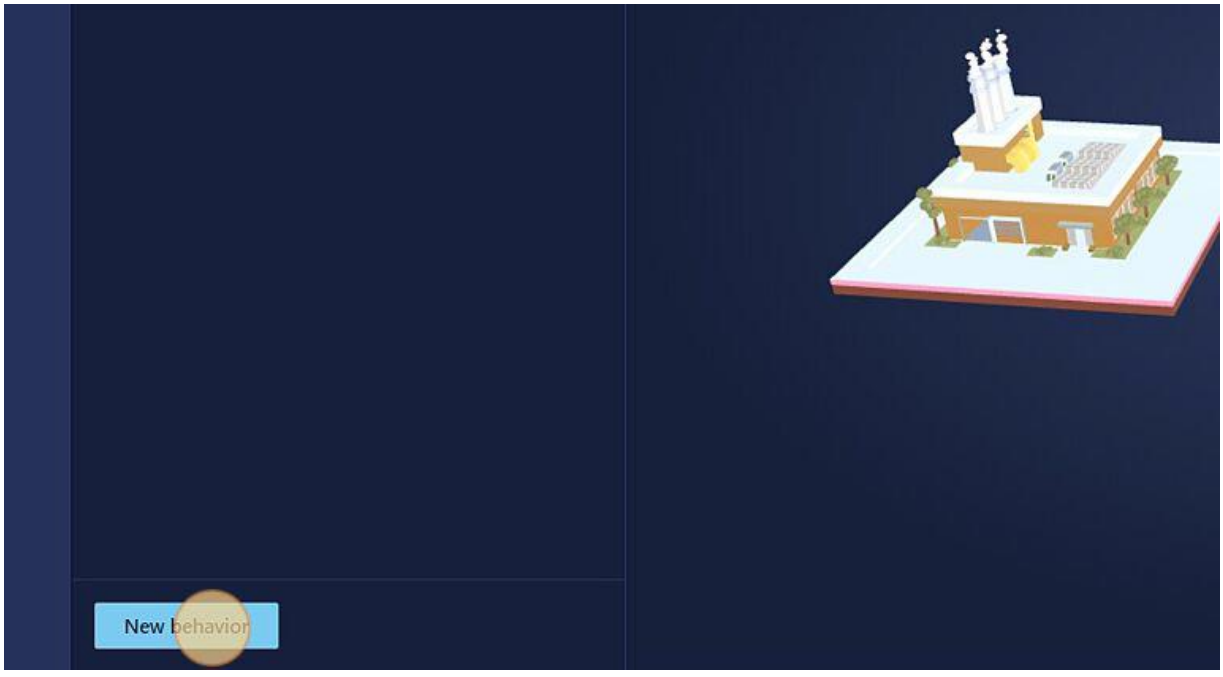


- Follow same procedure for all conditions and click "Save" and then click "Create Behavior".

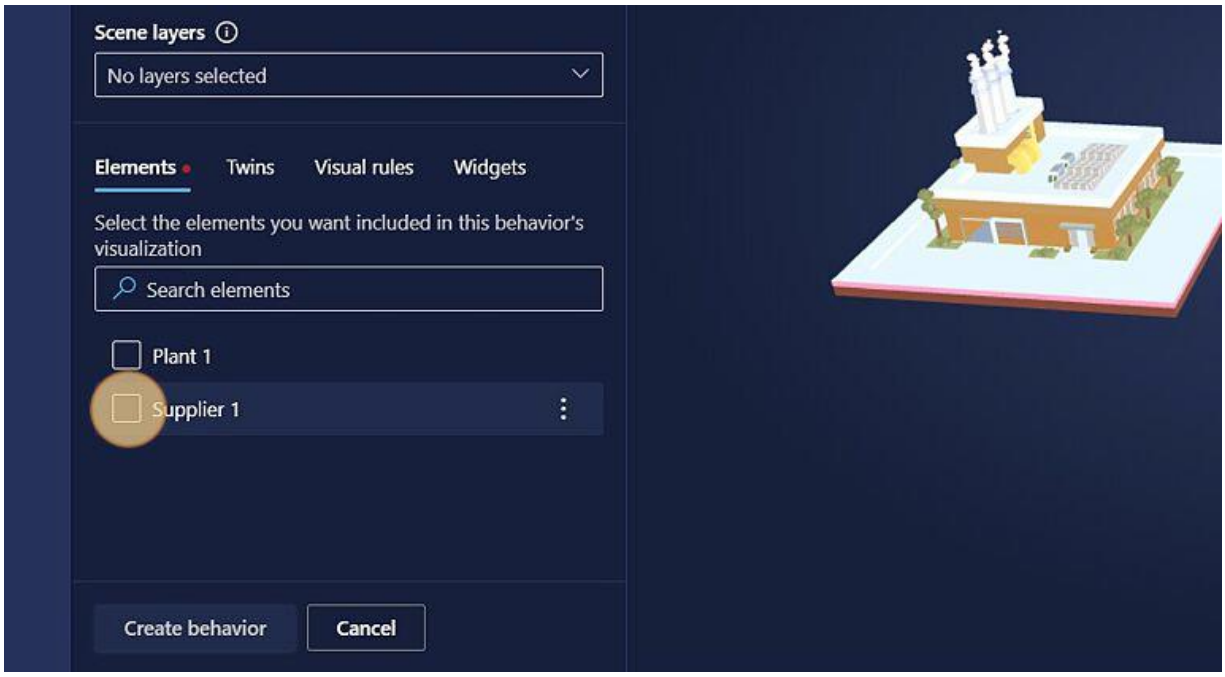


1.9 Creating a Widget Rule Behavior

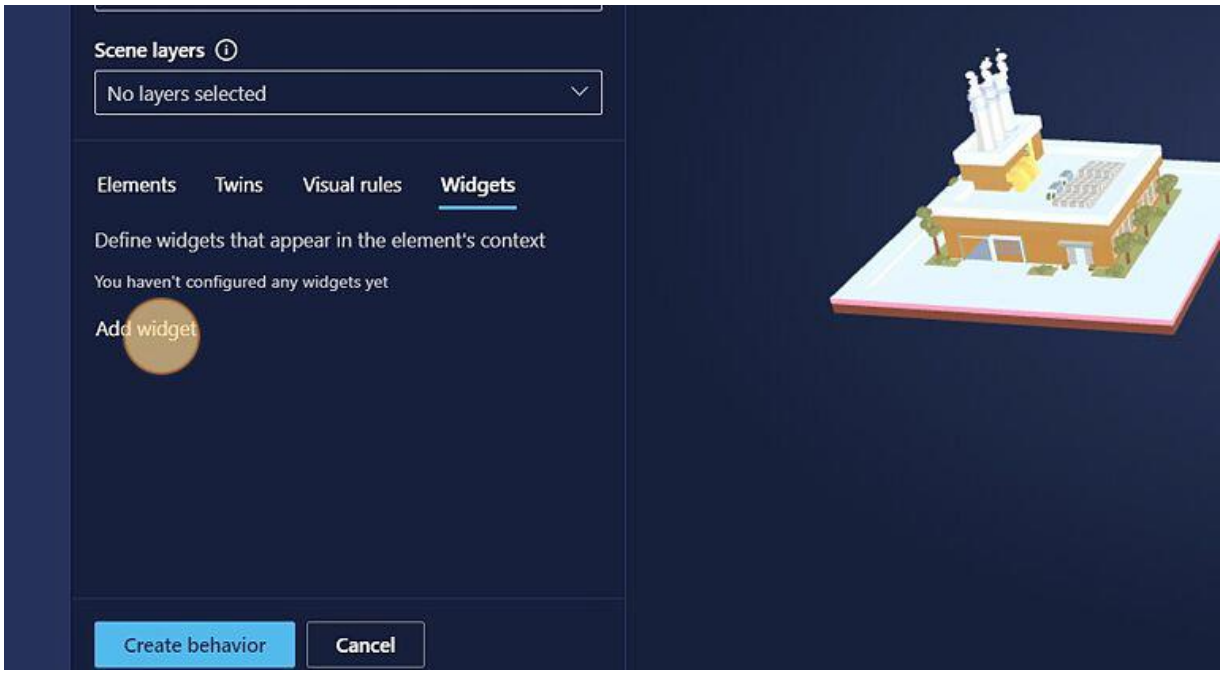
- Click on "New Behavior".



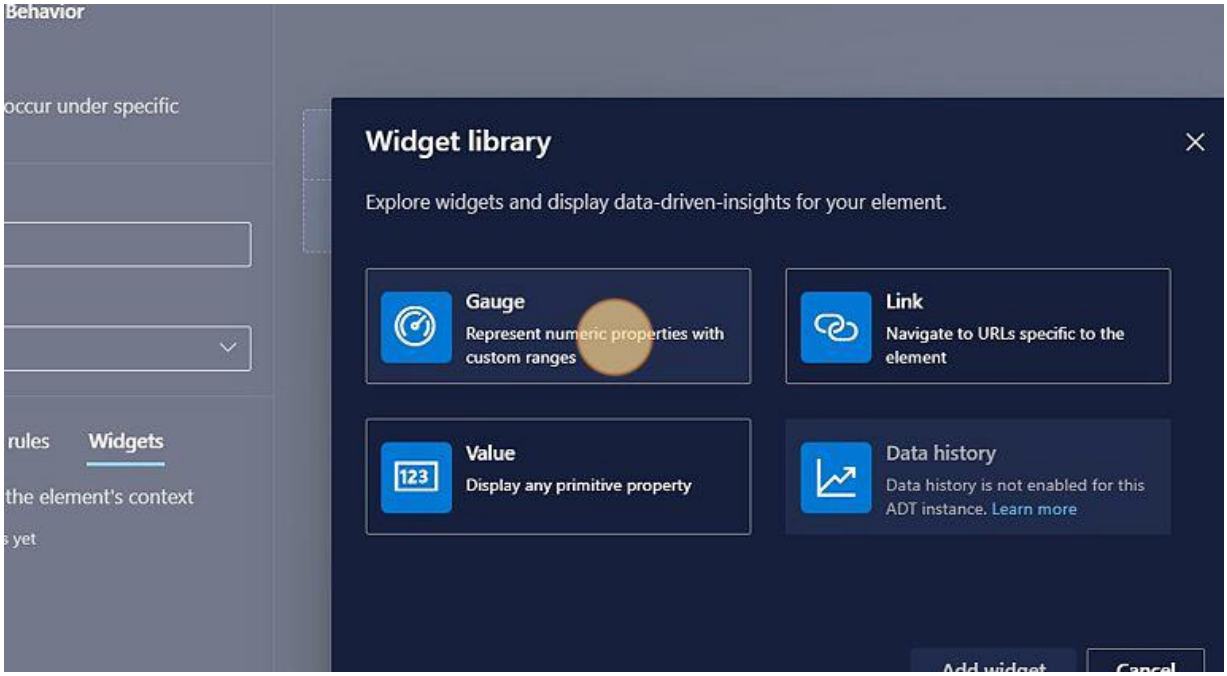
- Enter "Inventory Level" as the Display Name and select "Supplier 1" twin Element from the Elements section.



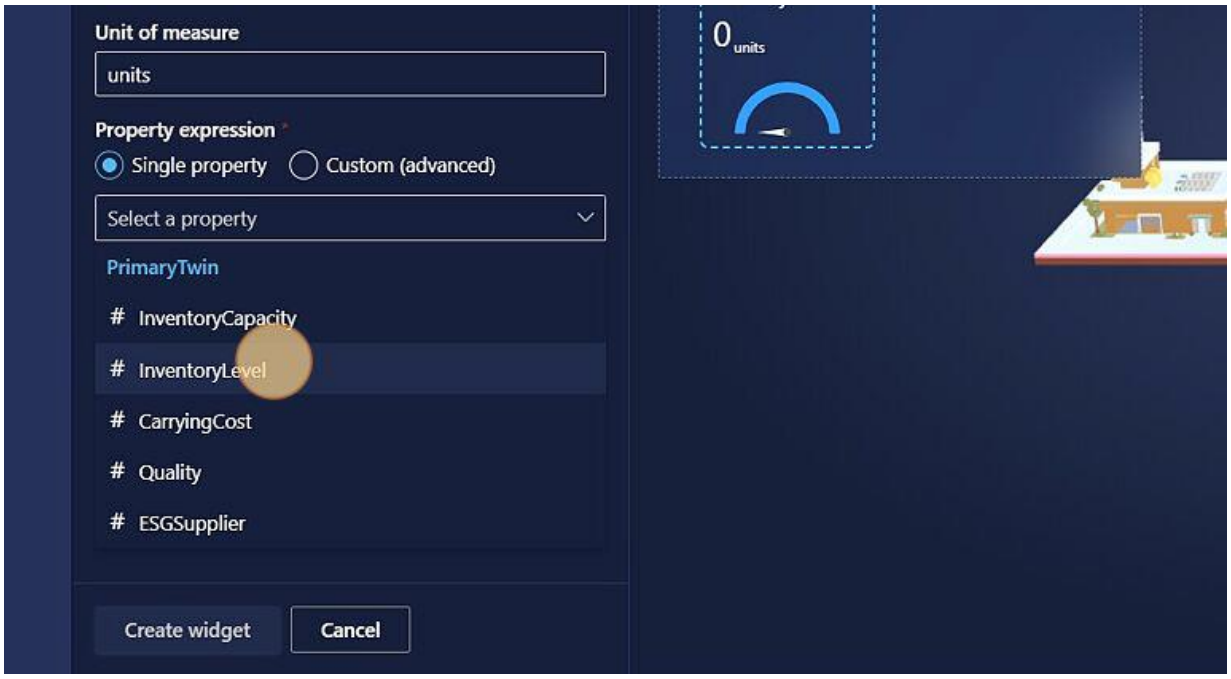
- Select "Add widget" in the Widgets section.



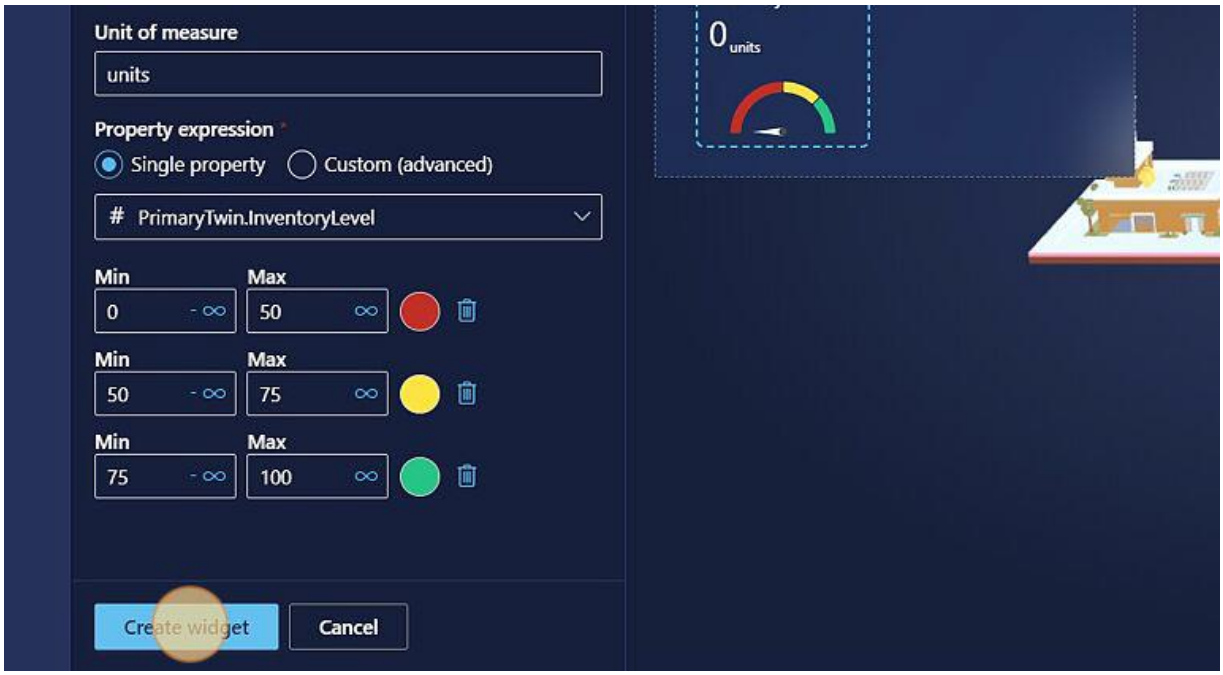
- Select a widget and click on "Add Widget".



- Enter "Inventory Level" as Display Name, "units" in Units of measure and "InventoryLevel" in the Property Expression.

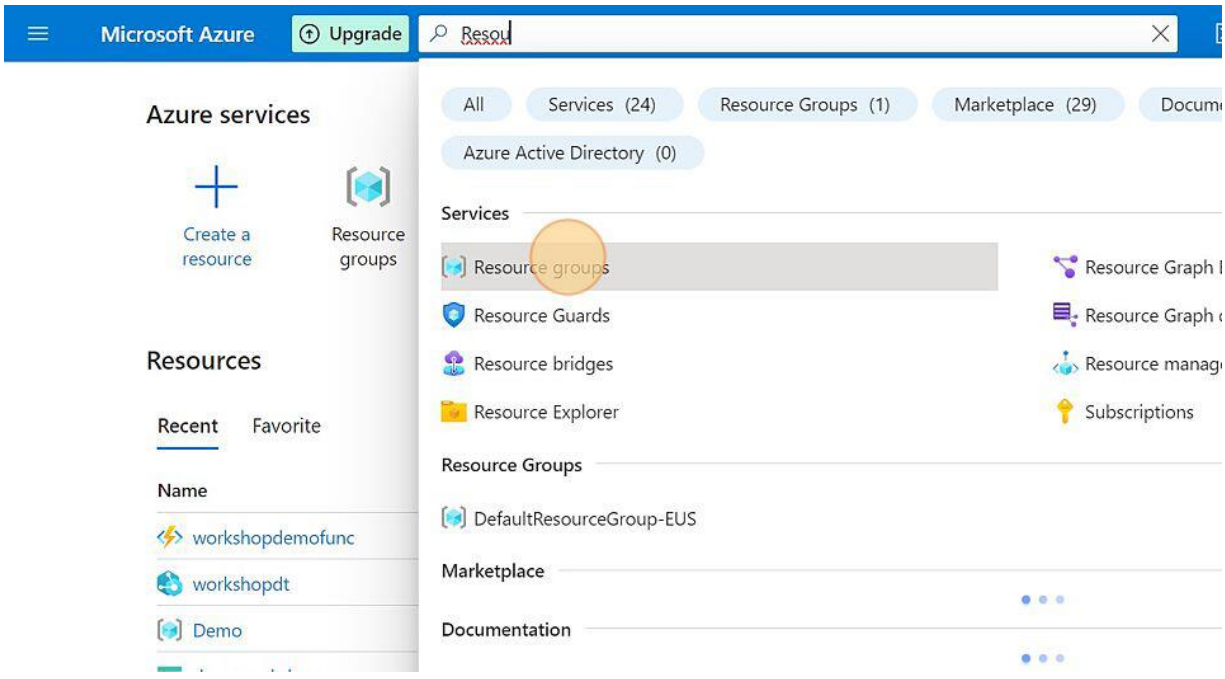


- Customise the widget by adding different range and associated color and click on "Create Widget" and then click on "Create Behavior".

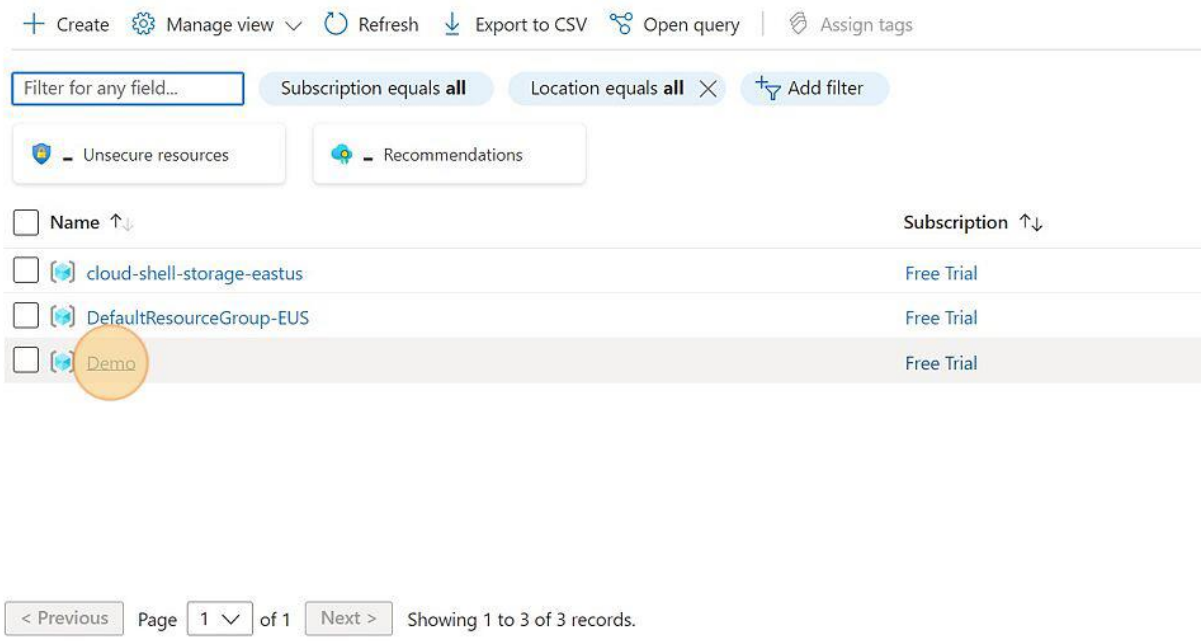


1.10 Deleting the Resources

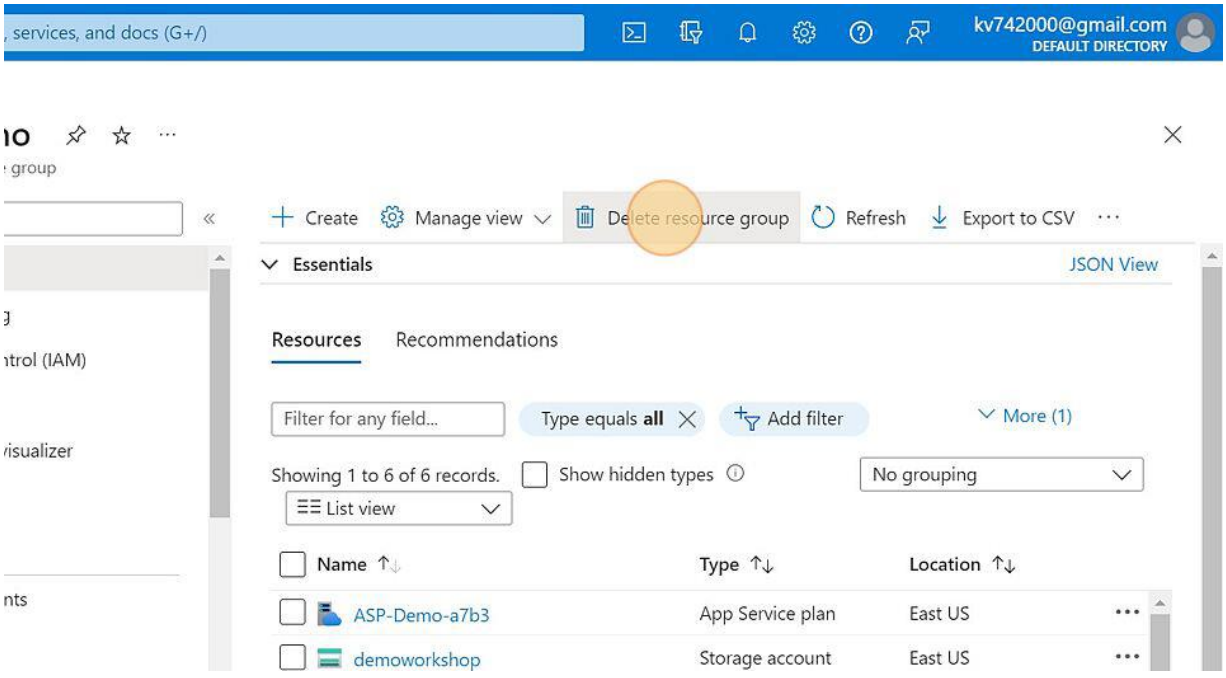
- Search for "Research Group" in the Search bar.



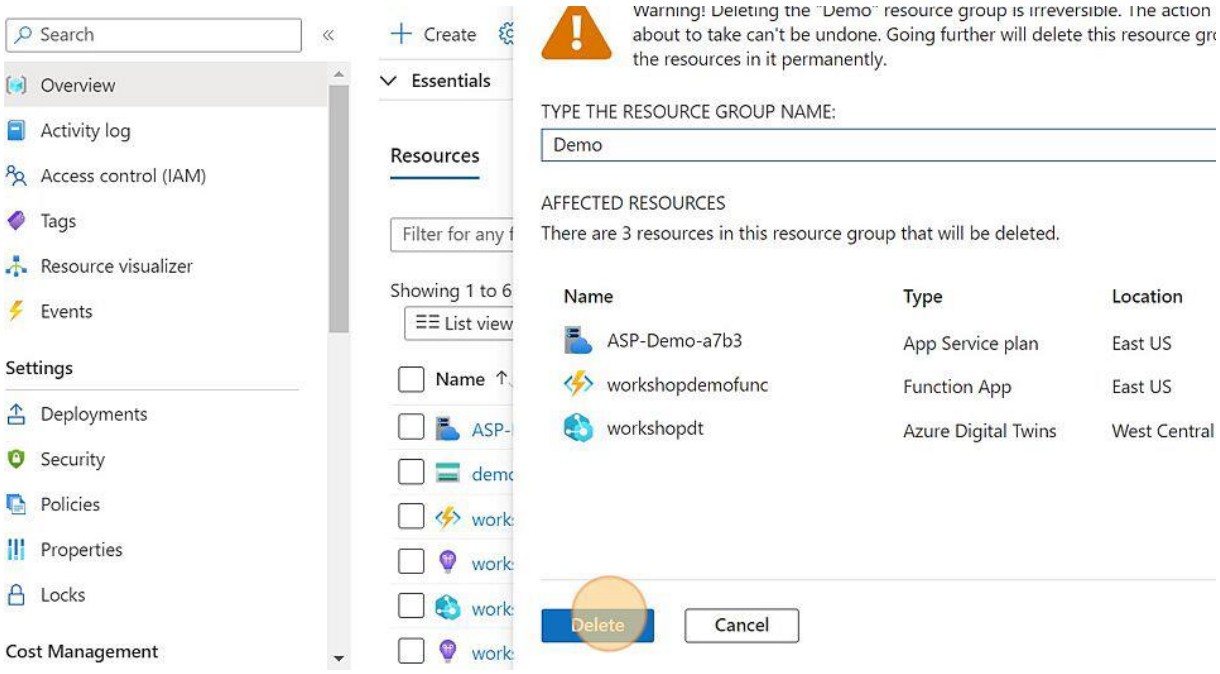
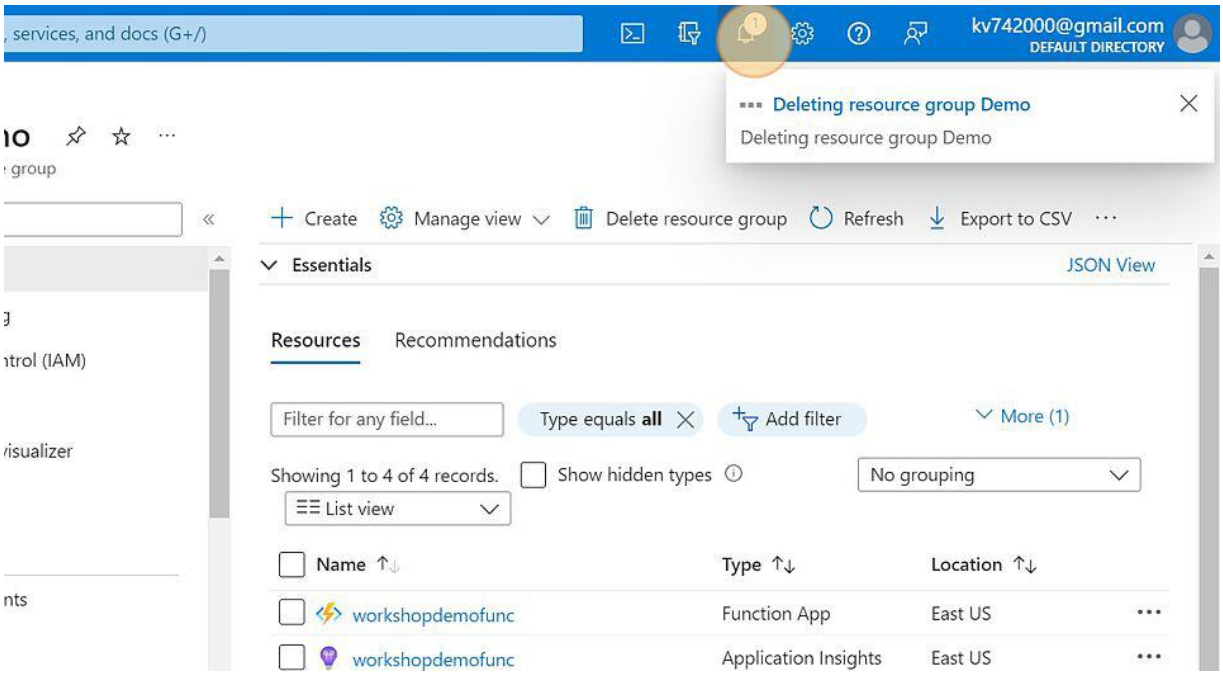
- Select the "Demo" Resource group.



- Click on "Delete resouce group" option.



- Confirm by typing resource group name in the text field and click “Delete”.



- A notification will popup confirming deletion of resources.