

Lab18 – Understanding Read-Access Geo-Redundant Storage (RA-GRS) - Azure

Read-access geo-redundant storage

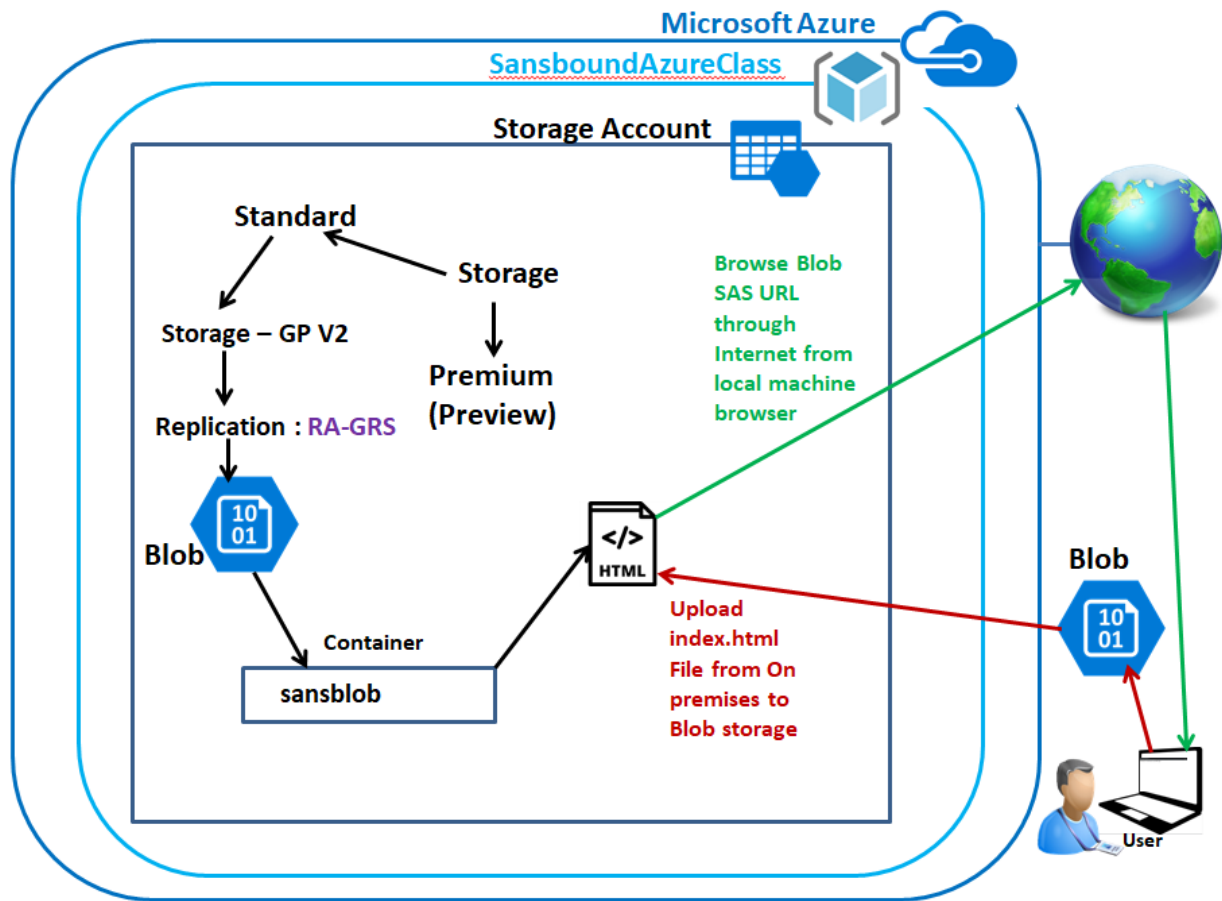
Read-access geo-redundant storage (RA-GRS) maximizes availability for your storage account. RA-GRS provides read-only access to the data in the secondary location, in addition to geo-replication across two regions.

When you enable read-only access to your data in the secondary region, your data is available on a secondary endpoint as well as on the primary endpoint for your storage account. The secondary endpoint is similar to the primary endpoint, but appends the suffix `-secondary` to the account name. For example, if your primary endpoint for the Blob service is `myaccount.blob.core.windows.net`, then your secondary endpoint is `myaccount-secondary.blob.core.windows.net`. The access keys for your storage account are the same for both the primary and secondary endpoints.

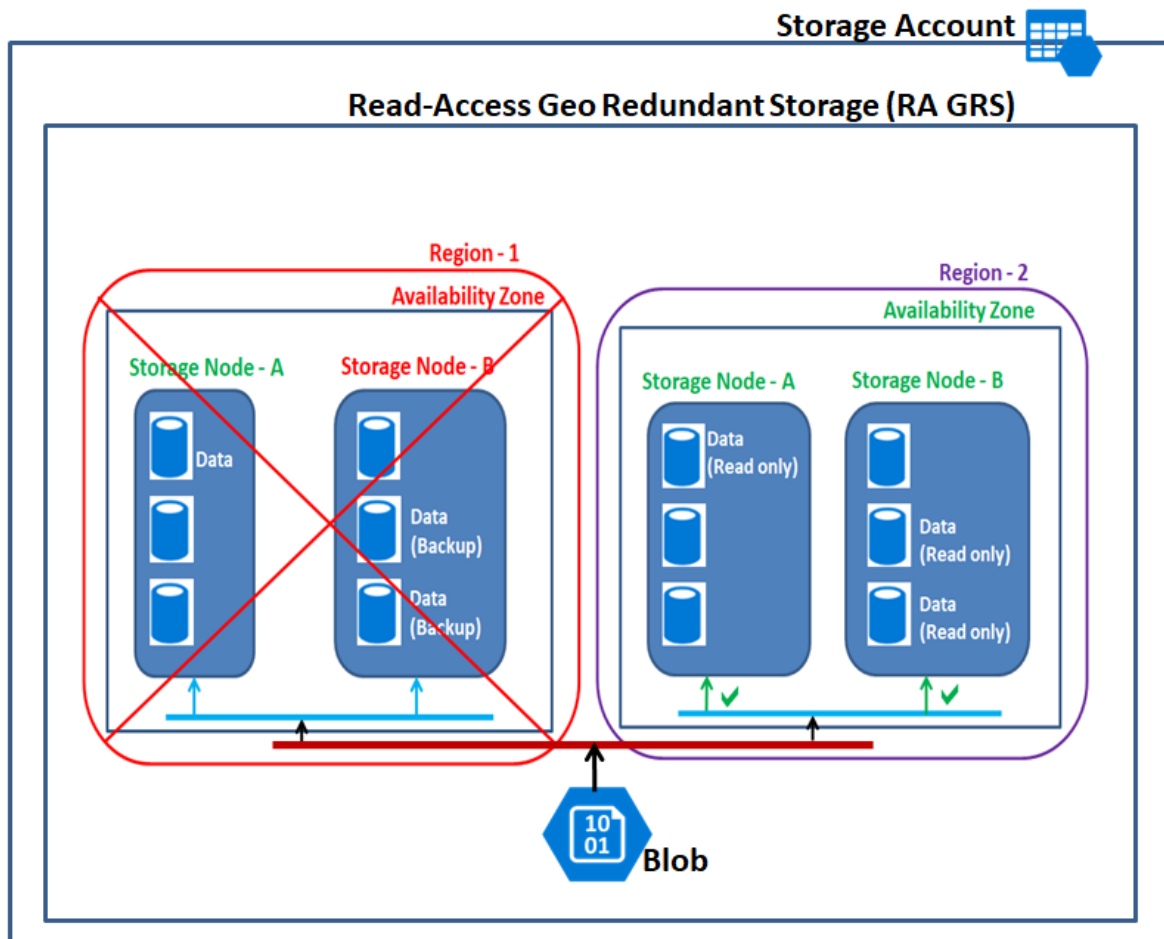
Some considerations to keep in mind when using RA-GRS:

- Your application has to manage which endpoint it is interacting with when using RA-GRS.
- Since asynchronous replication involves a delay, changes that haven't yet been replicated to the secondary region may be lost if data can't be recovered from the primary region.
- You can check the Last Sync Time of your storage account. Last Sync Time is a GMT date/time value. All primary writes before the Last Sync Time have been successfully written to the secondary location, meaning that they are available to be read from the secondary location. Primary writes after the Last Sync Time may or may not be available for reads yet. You can query this value using the [Azure portal](#), [Azure PowerShell](#), or from one of the Azure Storage client libraries.
- If Microsoft initiates failover to the secondary region, you'll have read and write access to that data after the failover has completed. For more information, see [Disaster recovery guidance](#).
- For information on how to switch to the secondary region, see [What to do if an Azure Storage outage occurs](#).
- RA-GRS is intended for high-availability purposes. For scalability guidance, review the [performance checklist](#).
- For suggestions on how to design for high availability with RA-GRS, see [Designing Highly Available Applications using RA-GRS storage](#).

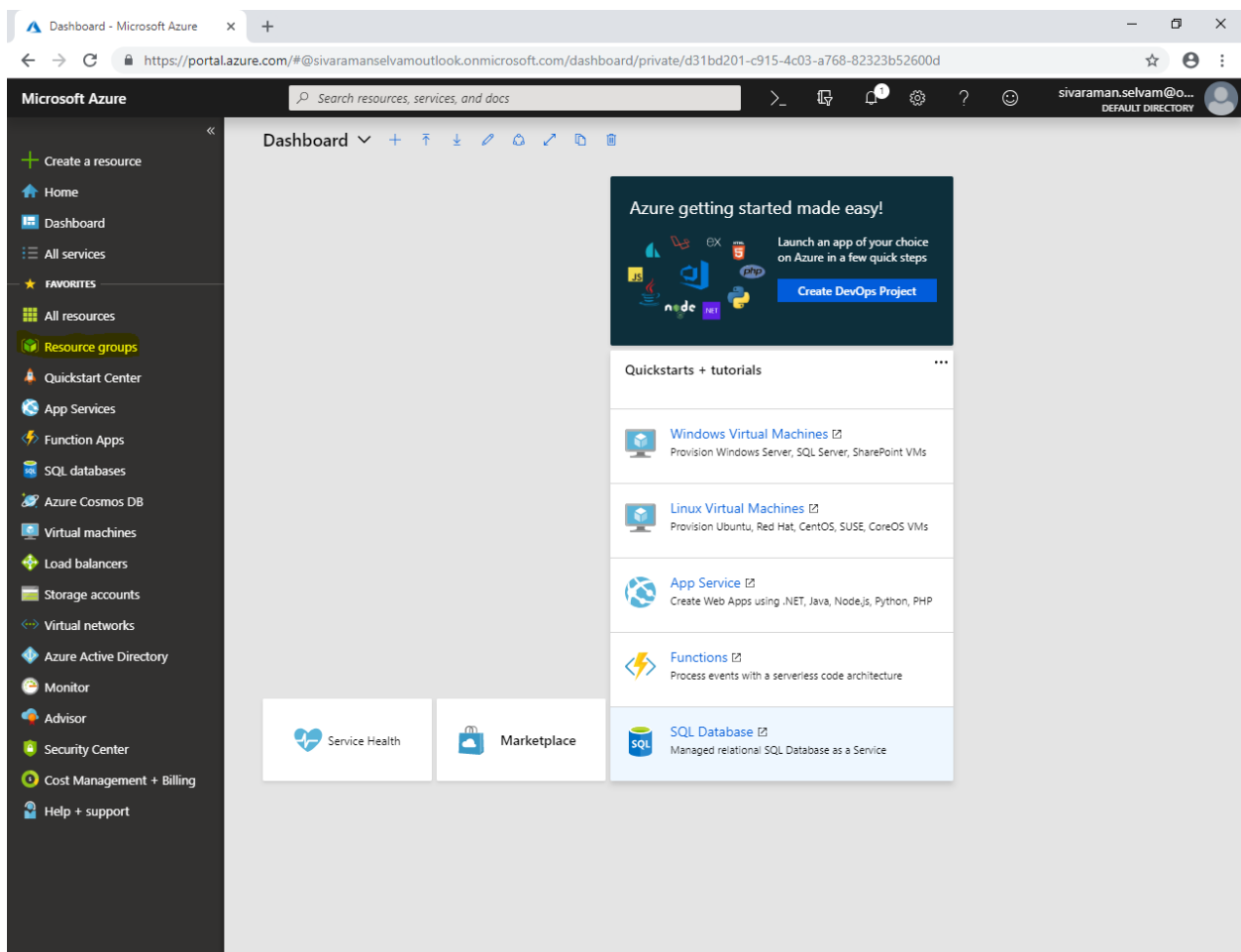
Topology:



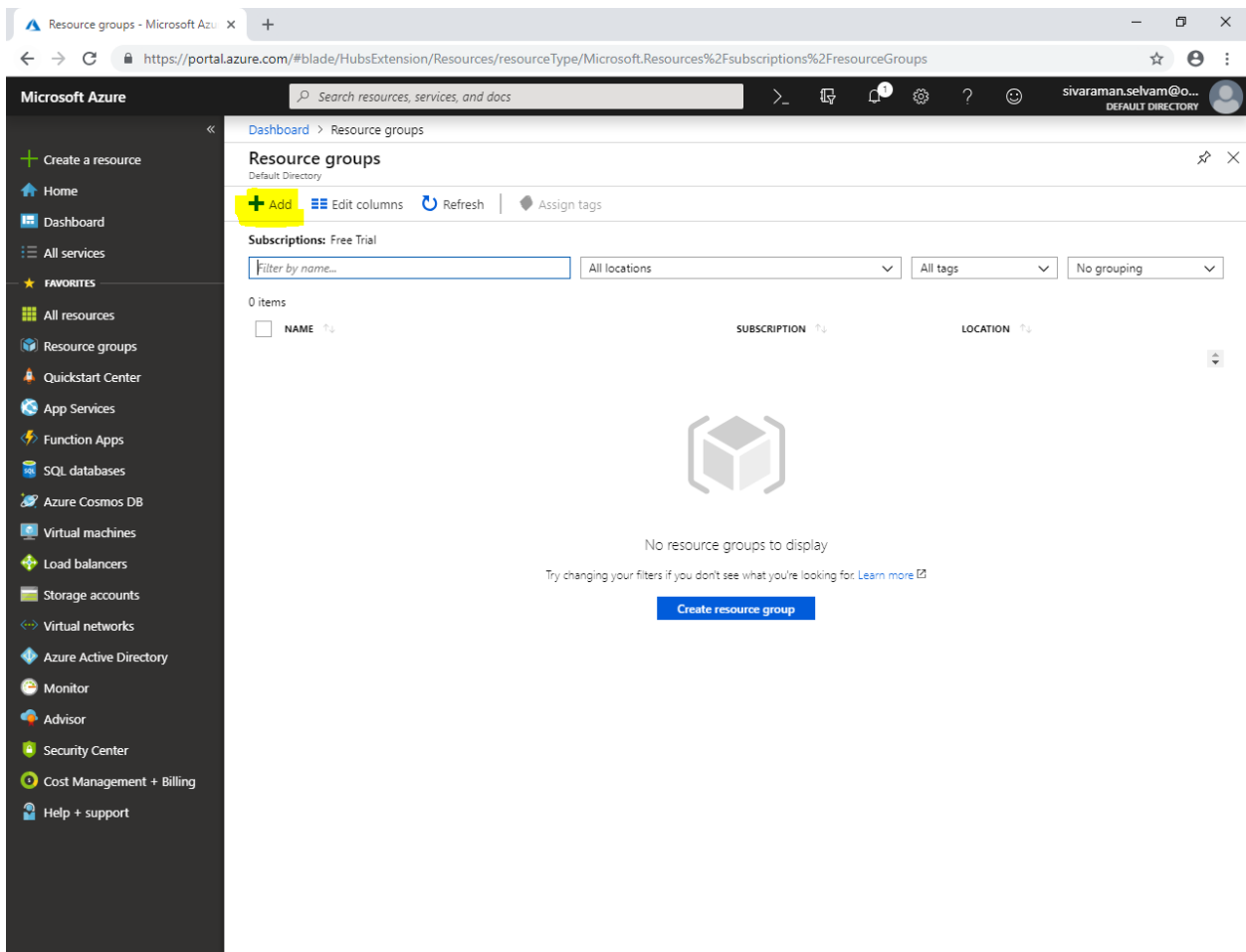
Back-End Topology:



In Azure portal, click **“Resource groups”**.



Click **"Add"**.



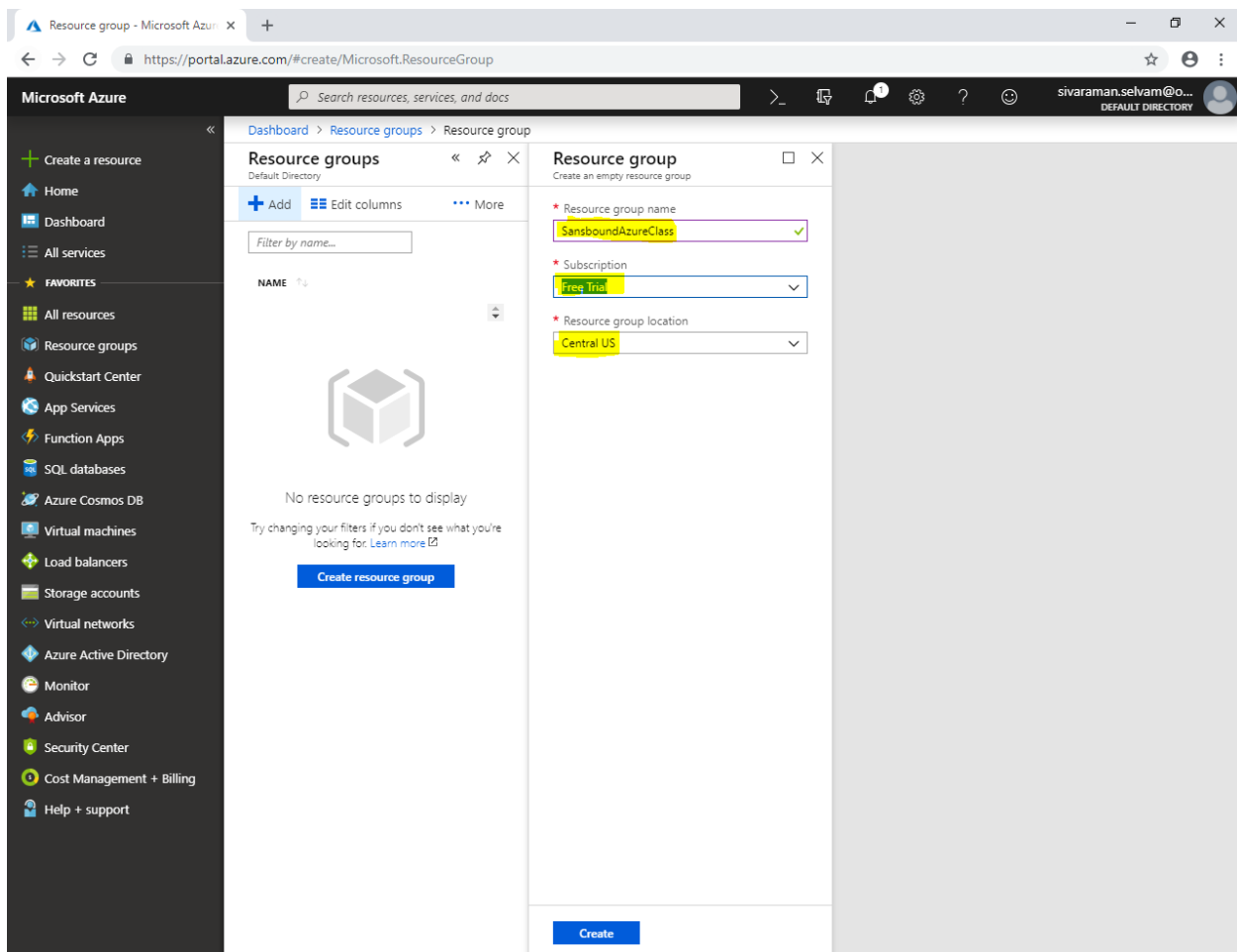
The screenshot shows the Microsoft Azure portal interface. The left sidebar contains navigation links such as 'Create a resource', 'Home', 'Dashboard', 'All services', and a 'FAVORITES' section with links to 'All resources', 'Resource groups', 'Quickstart Center', 'App Services', 'Function Apps', 'SQL databases', 'Azure Cosmos DB', 'Virtual machines', 'Load balancers', 'Storage accounts', 'Virtual networks', 'Azure Active Directory', 'Monitor', 'Advisor', 'Security Center', 'Cost Management + Billing', and 'Help + support'. The main content area is titled 'Resource groups' and includes a search bar, a '+ Add' button (highlighted in yellow), and links for 'Edit columns', 'Refresh', and 'Assign tags'. Below this, there are filters for 'Subscriptions: Free Trial', a text input for 'Filter by name...', and dropdown menus for 'All locations', 'All tags', and 'No grouping'. The table below shows '0 items' with columns for 'NAME', 'SUBSCRIPTION', and 'LOCATION'. A large gray cube icon is displayed in the center of the table area, with the text 'No resource groups to display' and a link to 'Learn more'. A blue button labeled 'Create resource group' is at the bottom.

While create “Resource group”, type “Resource group name” as “SansboundAzureClass”.

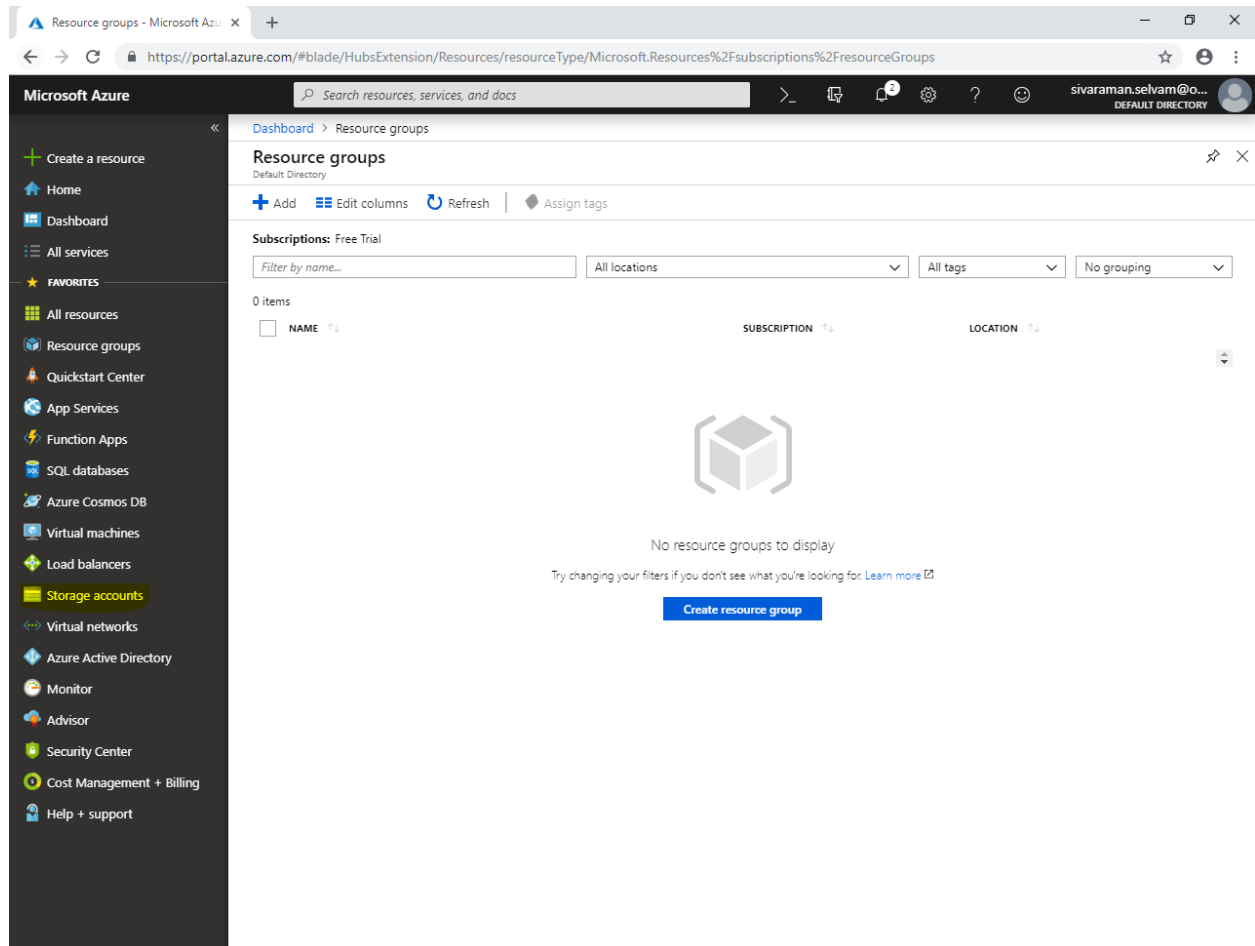
Select “Subscription” as “Free Trial”.

Select “Resource Group location” as “Central US”.

Click “Create”.

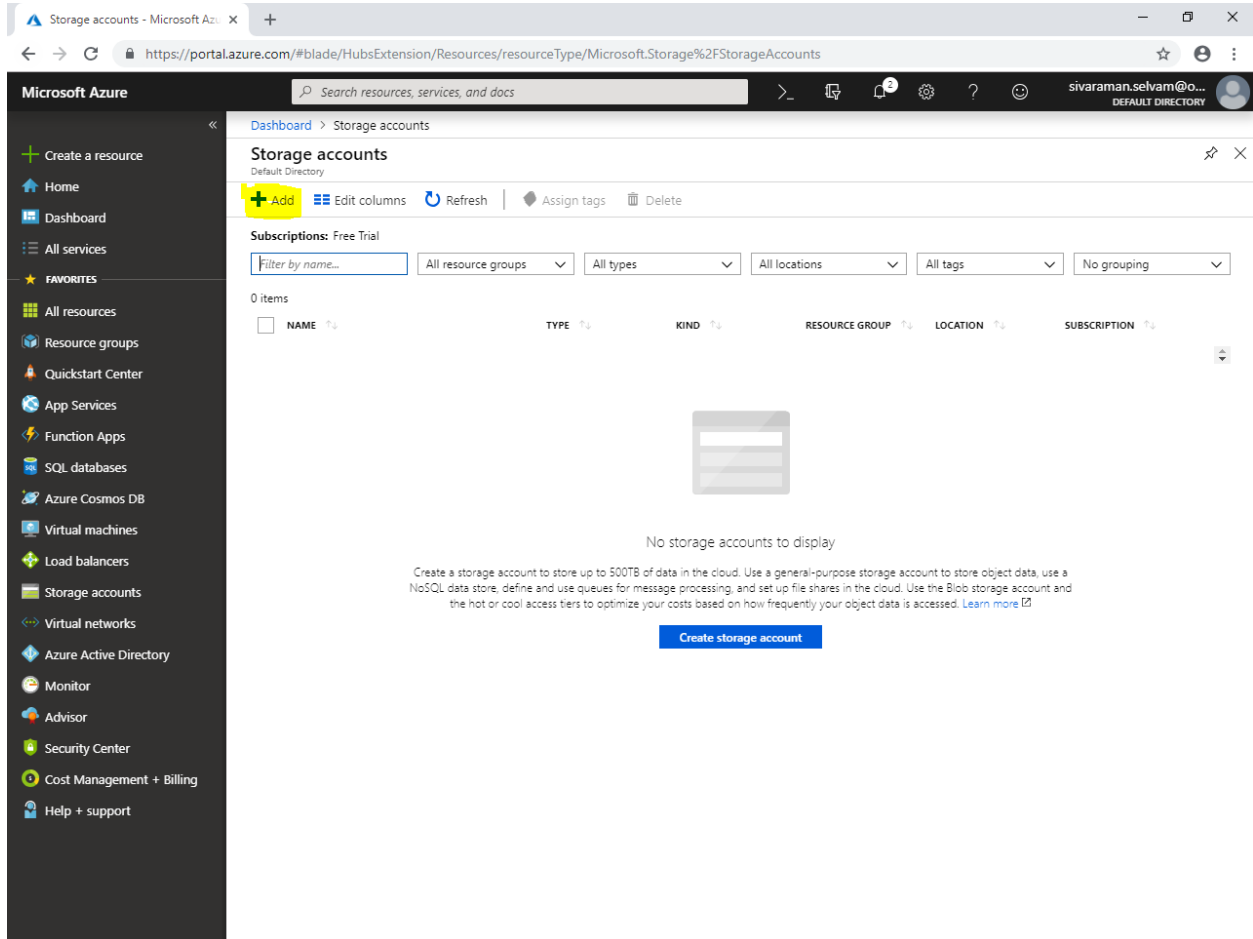


In Portal, Click **“Storage accounts”** in left side panel.



In “Storage accounts”.

Click “Add”.



The screenshot shows the Microsoft Azure portal interface. The left sidebar contains navigation links for various services, including Storage accounts. The main content area displays the 'Storage accounts' page, which is currently empty. A message at the bottom states: 'No storage accounts to display. Create a storage account to store up to 500TB of data in the cloud. Use a general-purpose storage account to store object data, use a NoSQL data store, define and use queues for message processing, and set up file shares in the cloud. Use the Blob storage account and the hot or cool access tiers to optimize your costs based on how frequently your object data is accessed. [Learn more](#)'.

Storage accounts - Microsoft Azure

Search resources, services, and docs

Dashboard > Storage accounts

Storage accounts

Subscriptions: Free Trial

Filter by name... All resource groups All types All locations All tags No grouping

0 items

NAME	TYPE	KIND	RESOURCE GROUP	LOCATION	SUBSCRIPTION
------	------	------	----------------	----------	--------------

No storage accounts to display

Create a storage account to store up to 500TB of data in the cloud. Use a general-purpose storage account to store object data, use a NoSQL data store, define and use queues for message processing, and set up file shares in the cloud. Use the Blob storage account and the hot or cool access tiers to optimize your costs based on how frequently your object data is accessed. [Learn more](#)

Create storage account

Select “Subscription” as “Free Trial”.

Select “Resource group” as “SansboundAzureClass”.

Type “Storage account name” as “sanboundstorage”.

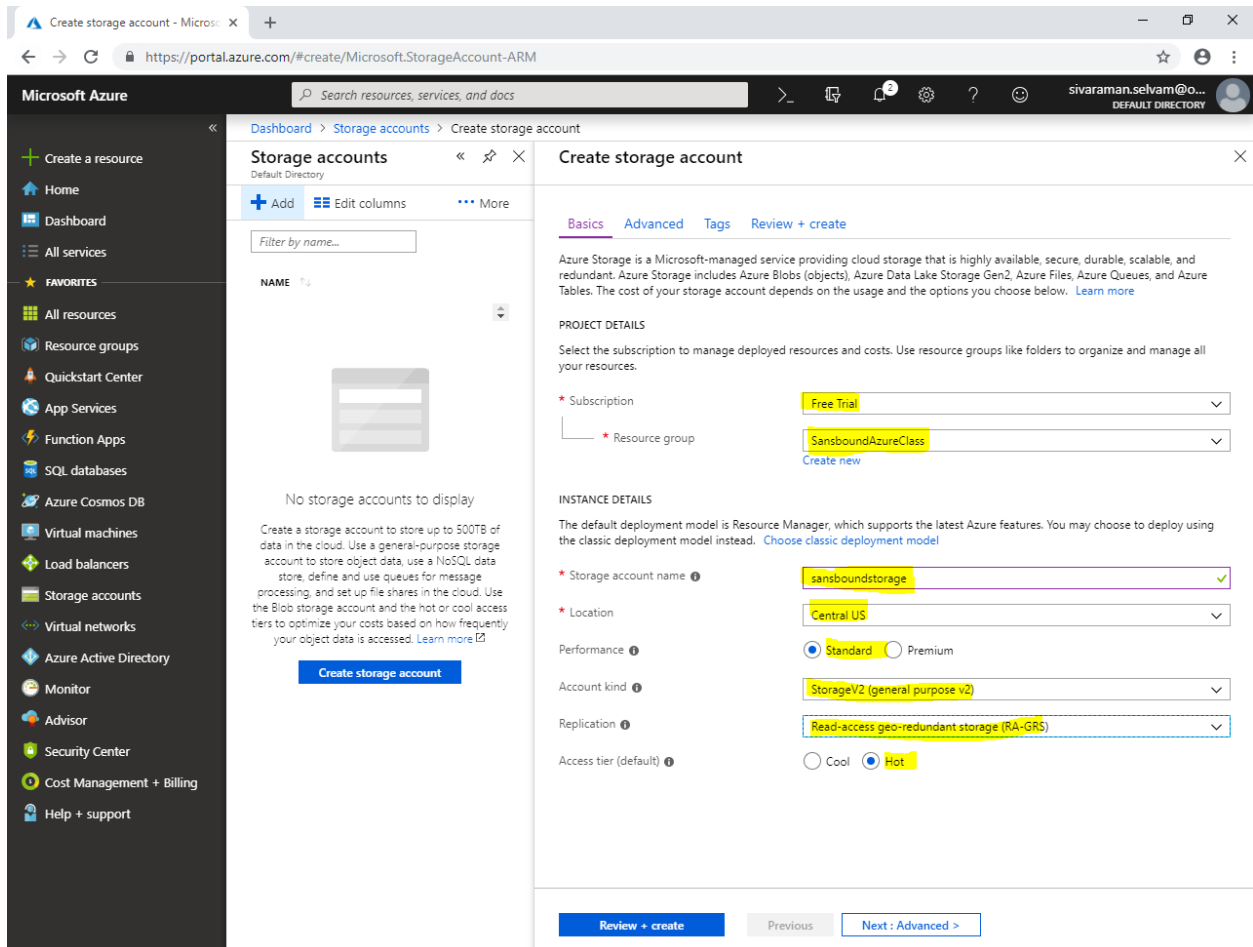
Select “Location” as “Central India”.

Select “Performance” as “Standard”.

Select “Account kind” as “Storage V2”.

Select “Replication” as “Read-access geo-redundant storage (RA-GRS)”.

Click “Access tier” as “Hot”.

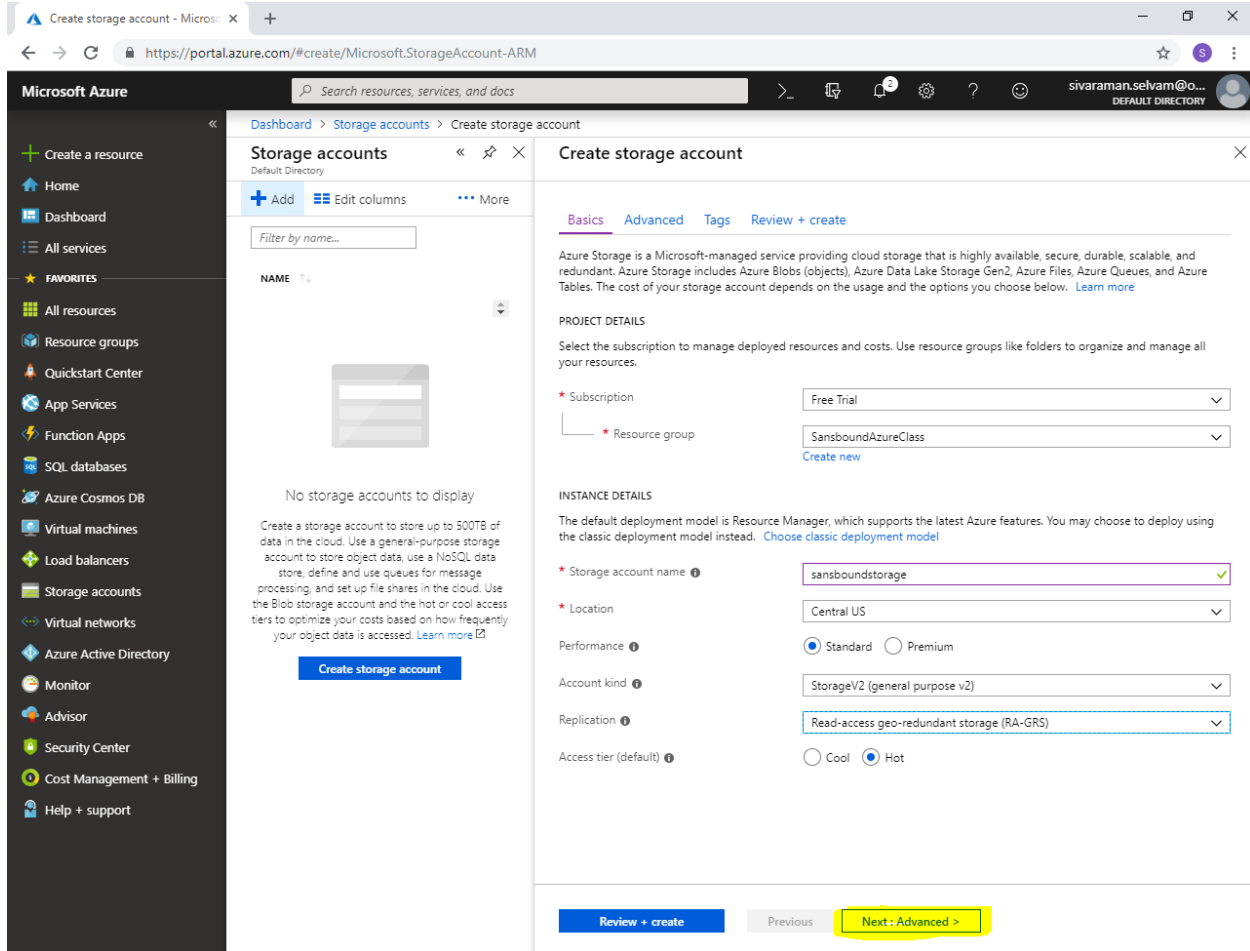


The screenshot shows the Microsoft Azure portal interface for creating a new storage account. The left sidebar contains navigation links for various Azure services. The main content area is titled 'Create storage account' and is divided into two panes. The left pane shows a list of storage accounts (currently empty) and a 'Create storage account' button. The right pane shows the configuration details for the new storage account, organized into sections: 'Basics', 'Advanced', 'Tags', and 'Review + create'. The 'Basics' section is active and displays the following configuration:

- Subscription:** Free Trial
- Resource group:** SansboundAzureClass
- Storage account name:** sanboundstorage
- Location:** Central US
- Performance:** Standard (selected), Premium
- Account kind:** StorageV2 (general purpose v2)
- Replication:** Read-access geo-redundant storage (RA-GRS)
- Access tier (default):** Cool, Hot (selected)

At the bottom of the configuration pane, there are buttons for 'Review + create', 'Previous', and 'Next : Advanced >'. The 'Review + create' button is highlighted in blue.

Click **“Next : Advanced”**.



Microsoft Azure

Dashboard > Storage accounts > Create storage account

Storage accounts

Default Directory

+ Add Edit columns More

Filter by name...

NAME

No storage accounts to display

Create a storage account to store up to 500TB of data in the cloud. Use a general-purpose storage account to store object data, use a NoSQL data store, define and use queues for message processing, and set up file shares in the cloud. Use the Blob storage account and the hot or cool access tiers to optimize your costs based on how frequently your object data is accessed. [Learn more](#)

Create storage account

Create storage account

Basics Advanced Tags Review + create

Azure Storage is a Microsoft-managed service providing cloud storage that is highly available, secure, durable, scalable, and redundant. Azure Storage includes Azure Blobs (objects), Azure Data Lake Storage Gen2, Azure Files, Azure Queues, and Azure Tables. The cost of your storage account depends on the usage and the options you choose below. [Learn more](#)

PROJECT DETAILS

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

* Subscription Free Trial

* Resource group SansboundAzureClass

Create new

INSTANCE DETAILS

The default deployment model is Resource Manager, which supports the latest Azure features. You may choose to deploy using the classic deployment model instead. [Choose classic deployment model](#)

* Storage account name sansboundstorage

* Location Central US

Performance Standard Premium

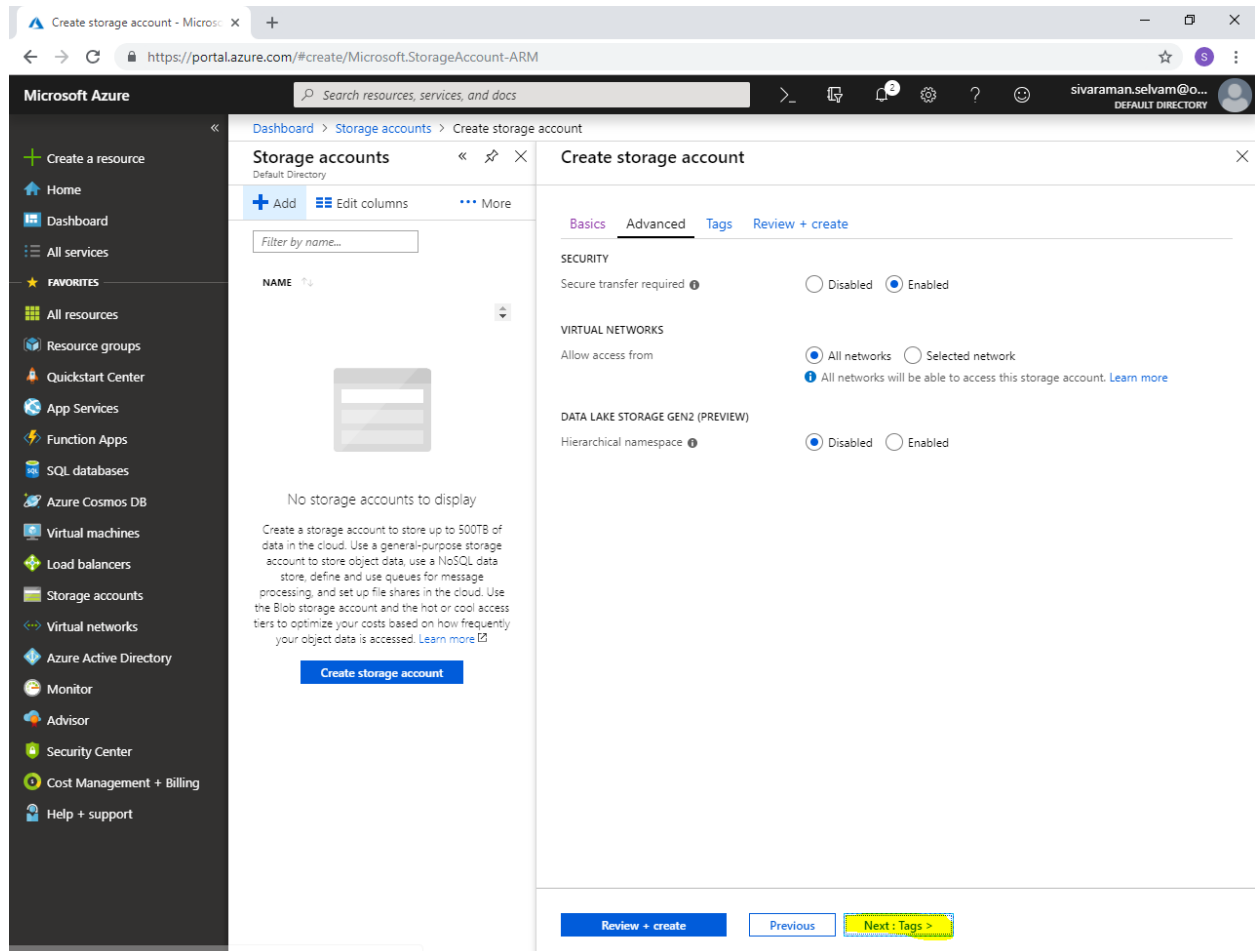
Account kind StorageV2 (general purpose v2)

Replication Read-access geo-redundant storage (RA-GRS)

Access tier (default) Cool Hot

Review + create Previous Next: Advanced >

In **“Advanced”**, click **“Next : Tags >”**.



The screenshot shows the Azure portal interface for creating a storage account. The left sidebar contains the navigation menu with options like 'Create a resource', 'Home', 'Dashboard', 'All services', and 'FAVORITES'. The main area is titled 'Storage accounts' and 'Create storage account'. The 'Advanced' tab is selected, showing settings for SECURITY, VIRTUAL NETWORKS, and DATA LAKE STORAGE GEN2 (PREVIEW). The 'Next : Tags >' button is highlighted in yellow at the bottom right.

Microsoft Azure

Search resources, services, and docs

Dashboard > Storage accounts > Create storage account

Storage accounts

+ Add Edit columns More

Filter by name...

NAME

No storage accounts to display

Create a storage account to store up to 500TB of data in the cloud. Use a general-purpose storage account to store object data, use a NoSQL data store, define and use queues for message processing, and set up file shares in the cloud. Use the Blob storage account and the hot or cool access tiers to optimize your costs based on how frequently your object data is accessed. [Learn more](#)

Create storage account

Create storage account

Basics Advanced Tags Review + create

SECURITY

Secure transfer required ☐ Disabled ☒ Enabled

VIRTUAL NETWORKS

Allow access from ☒ All networks ☐ Selected network

☒ All networks will be able to access this storage account. [Learn more](#)

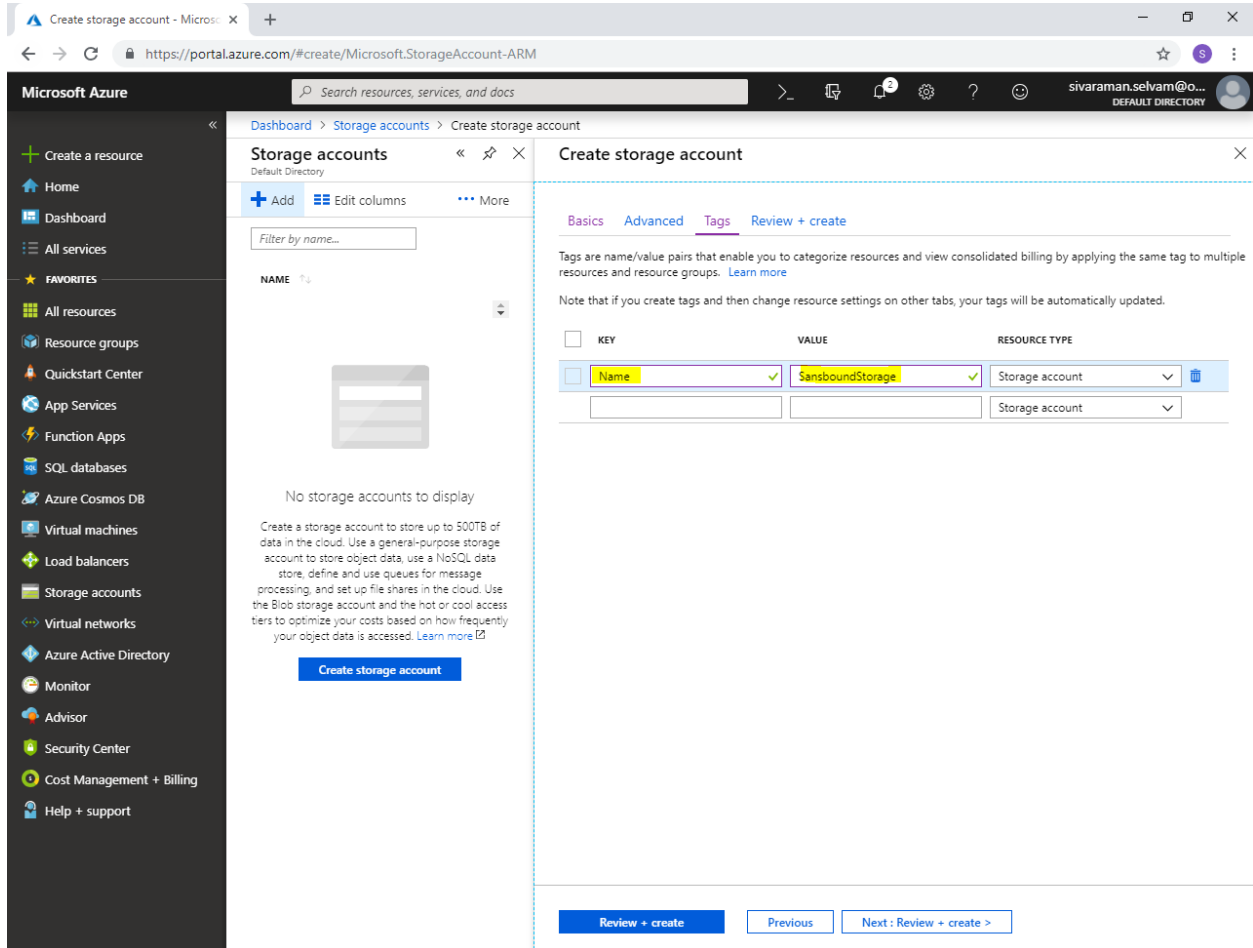
DATA LAKE STORAGE GEN2 (PREVIEW)

Hierarchical namespace ☒ Disabled ☐ Enabled

Review + create Previous Next : Tags >

In “Tags”,

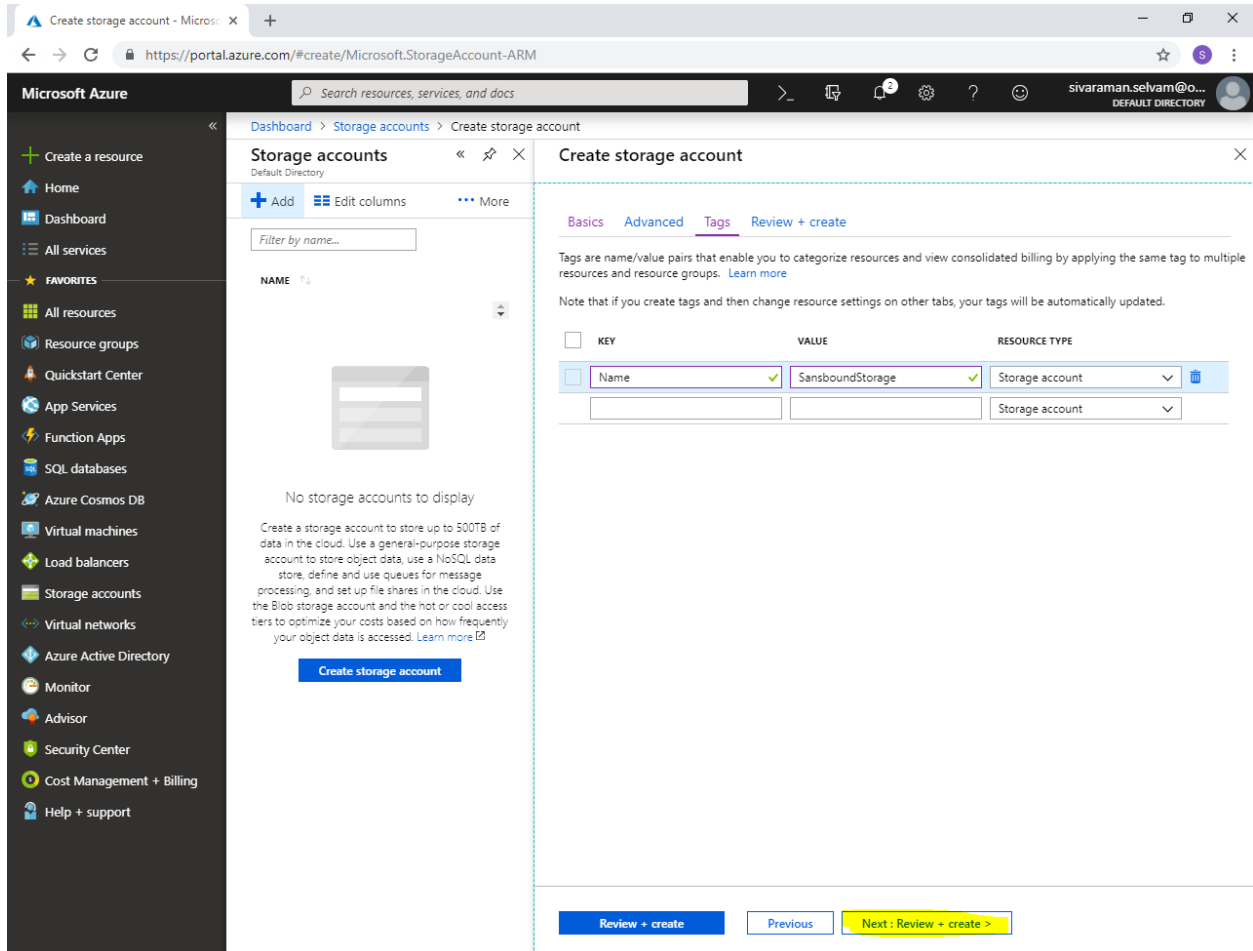
Type “Key” as “Name” and “VALUE” as “SansboundStorage”.



The screenshot shows the Microsoft Azure portal interface for creating a storage account. The left sidebar contains navigation links for various Azure services. The main content area is titled 'Create storage account' and includes tabs for 'Basics', 'Advanced', 'Tags', and 'Review + create'. The 'Tags' tab is active, displaying a table for adding tags. The table has columns for 'KEY', 'VALUE', and 'RESOURCE TYPE'. One tag is already added: Key 'Name', Value 'SansboundStorage', and Resource Type 'Storage account'. Below the table, there are buttons for 'Review + create', 'Previous', and 'Next: Review + create >'. The 'Storage accounts' section on the left shows a message: 'No storage accounts to display'.

KEY	VALUE	RESOURCE TYPE
Name	SansboundStorage	Storage account
		Storage account

Click **“Next : Review + create”**.



The screenshot shows the Azure portal interface for creating a storage account. The left sidebar contains the navigation menu with options like 'Create a resource', 'Home', 'Dashboard', 'All services', and 'FAVORITES'. The main area is titled 'Storage accounts' and 'Create storage account'. It shows a list of storage accounts (currently empty) and a 'Create storage account' button. The right pane displays the 'Review + create' step, which includes a table for tags and a 'Next : Review + create >' button.

Storage accounts

Default Directory

+ Add Edit columns More

Filter by name...

NAME

No storage accounts to display

Create a storage account to store up to 500TB of data in the cloud. Use a general-purpose storage account to store object data, use a NoSQL data store, define and use queues for message processing, and set up file shares in the cloud. Use the Blob storage account and the hot or cool access tiers to optimize your costs based on how frequently your object data is accessed. [Learn more](#)

Create storage account

Create storage account

Basics Advanced Tags Review + create

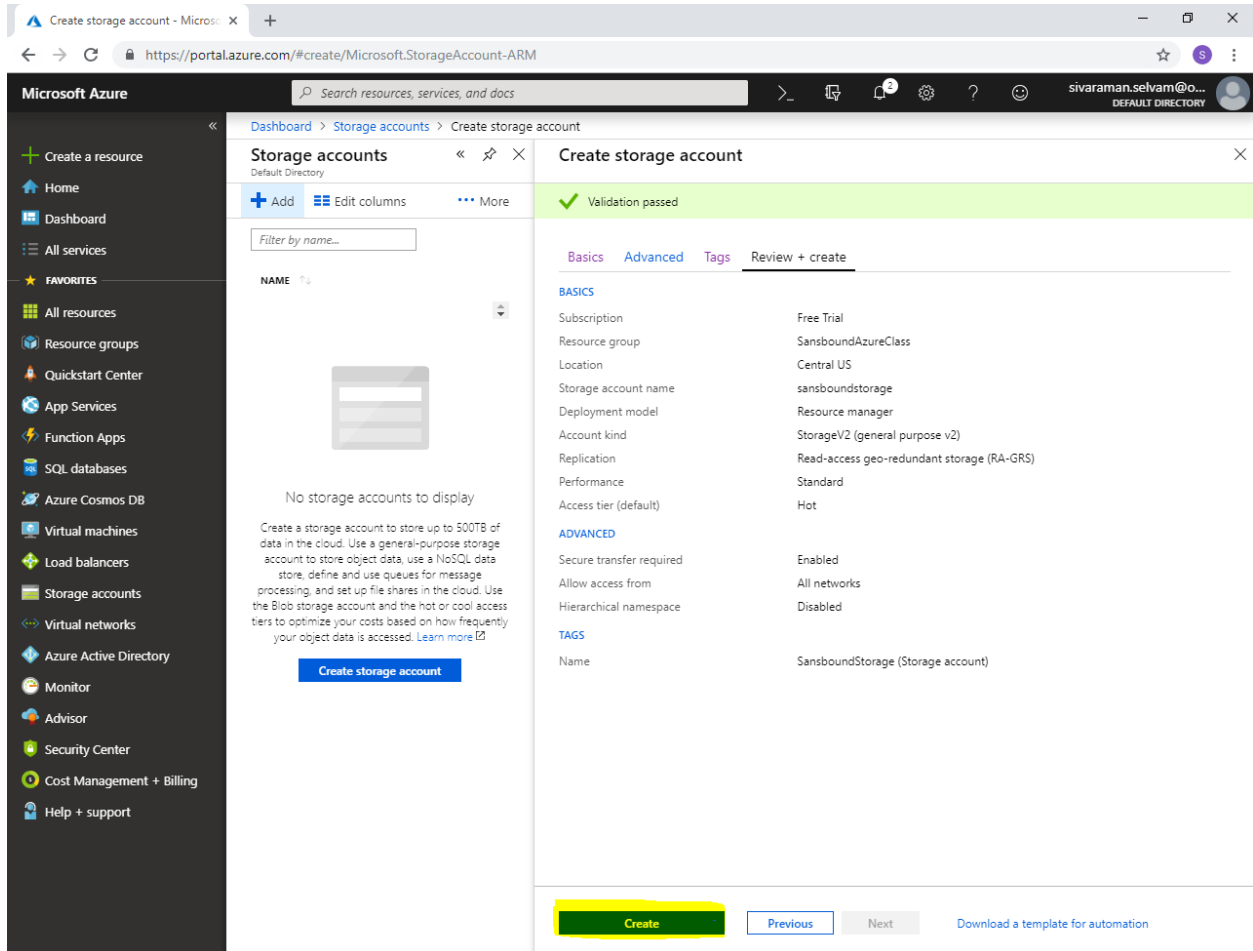
Tags are name/value pairs that enable you to categorize resources and view consolidated billing by applying the same tag to multiple resources and resource groups. [Learn more](#)

Note that if you create tags and then change resource settings on other tabs, your tags will be automatically updated.

KEY	VALUE	RESOURCE TYPE
<input type="checkbox"/>	Name	SansboundStorage
<input type="checkbox"/>		Storage account
<input type="checkbox"/>		Storage account

Review + create Previous Next : Review + create >

Click **“Create”**.

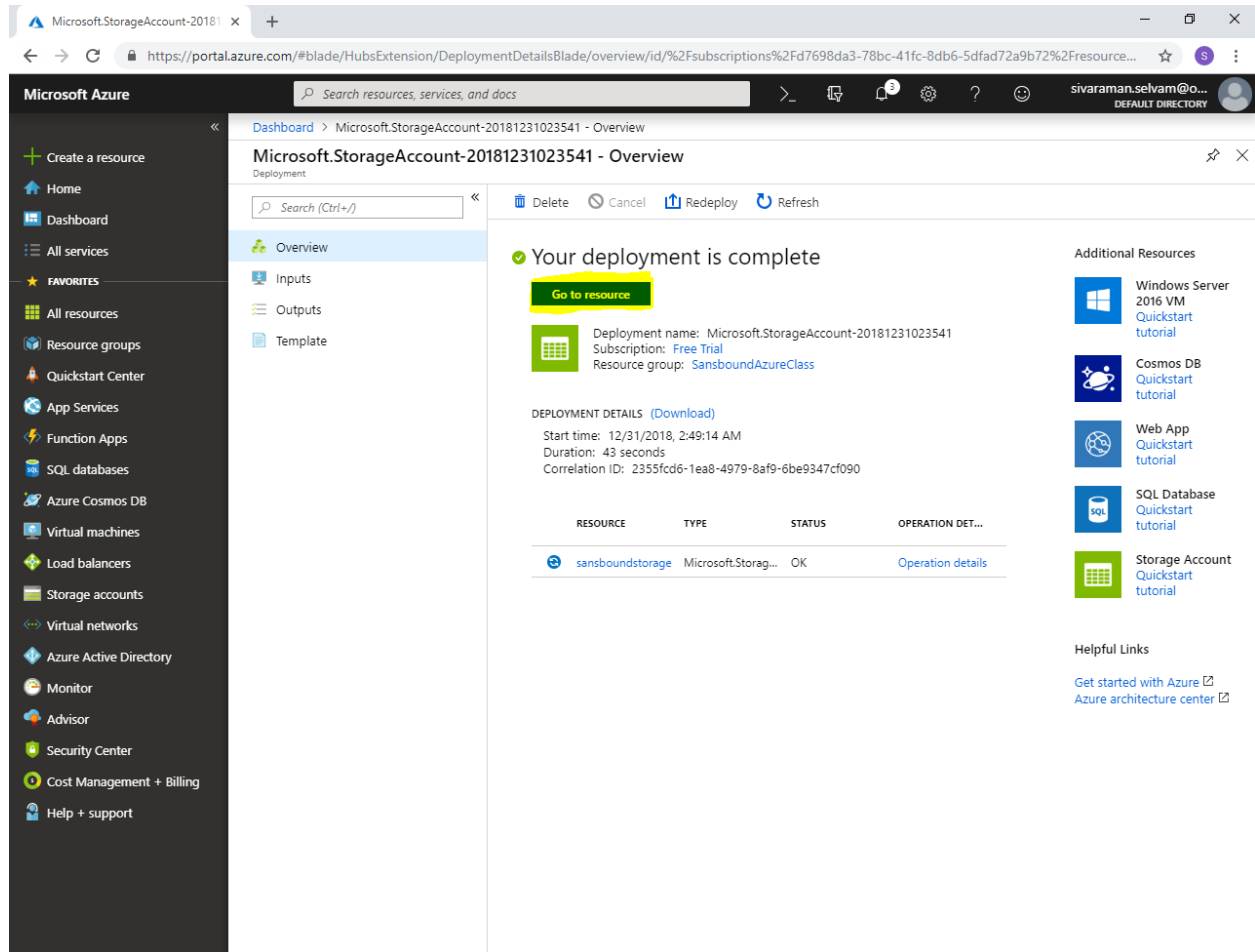


The screenshot shows the Microsoft Azure portal interface for creating a storage account. The left sidebar contains navigation links for various Azure services. The main content area displays the 'Create storage account' wizard, which is currently on the 'Basics' tab. A green banner at the top of the wizard indicates 'Validation passed'. The 'Basics' tab shows the following configuration details:

Category	Value
Subscription	Free Trial
Resource group	SansboundAzureClass
Location	Central US
Storage account name	sansboundstorage
Deployment model	Resource manager
Account kind	StorageV2 (general purpose v2)
Replication	Read-access geo-redundant storage (RA-GRS)
Performance	Standard
Access tier (default)	Hot
Secure transfer required	Enabled
Allow access from	All networks
Hierarchical namespace	Disabled
Tags	
Name	SansboundStorage (Storage account)

The 'Create' button at the bottom of the wizard is highlighted in yellow. Other buttons include 'Previous', 'Next', and 'Download a template for automation'.

Click **"Go to resource"**.



The screenshot shows the Microsoft Azure portal interface. The left sidebar contains navigation options like 'Create a resource', 'Home', 'Dashboard', 'All services', and 'FAVORITES'. The main content area displays the 'Overview' page for the deployment 'Microsoft.StorageAccount-20181231023541'. A green checkmark indicates 'Your deployment is complete'. A yellow box highlights the 'Go to resource' button. Below this, deployment details are shown: Start time: 12/31/2018, 2:49:14 AM; Duration: 43 seconds; Correlation ID: 2355fcd6-1ea8-4979-8af9-6be9347cf090. A table lists the resource 'sansboundstorage' with status 'OK'. On the right, 'Additional Resources' and 'Helpful Links' are provided.

Microsoft Azure Search resources, services, and docs

Dashboard > Microsoft.StorageAccount-20181231023541 - Overview

Microsoft.StorageAccount-20181231023541 - Overview

Deployment

Search (Ctrl+/)

Overview

Inputs

Outputs

Template

Delete Cancel Redeploy Refresh

✓ Your deployment is complete

Go to resource

Deployment name: Microsoft.StorageAccount-20181231023541
Subscription: [Free Trial](#)
Resource group: [SansboundAzureClass](#)

DEPLOYMENT DETAILS (Download)

Start time: 12/31/2018, 2:49:14 AM
Duration: 43 seconds
Correlation ID: 2355fcd6-1ea8-4979-8af9-6be9347cf090

RESOURCE	TYPE	STATUS	OPERATION DET...
sansboundstorage	Microsoft.Storage...	OK	Operation details

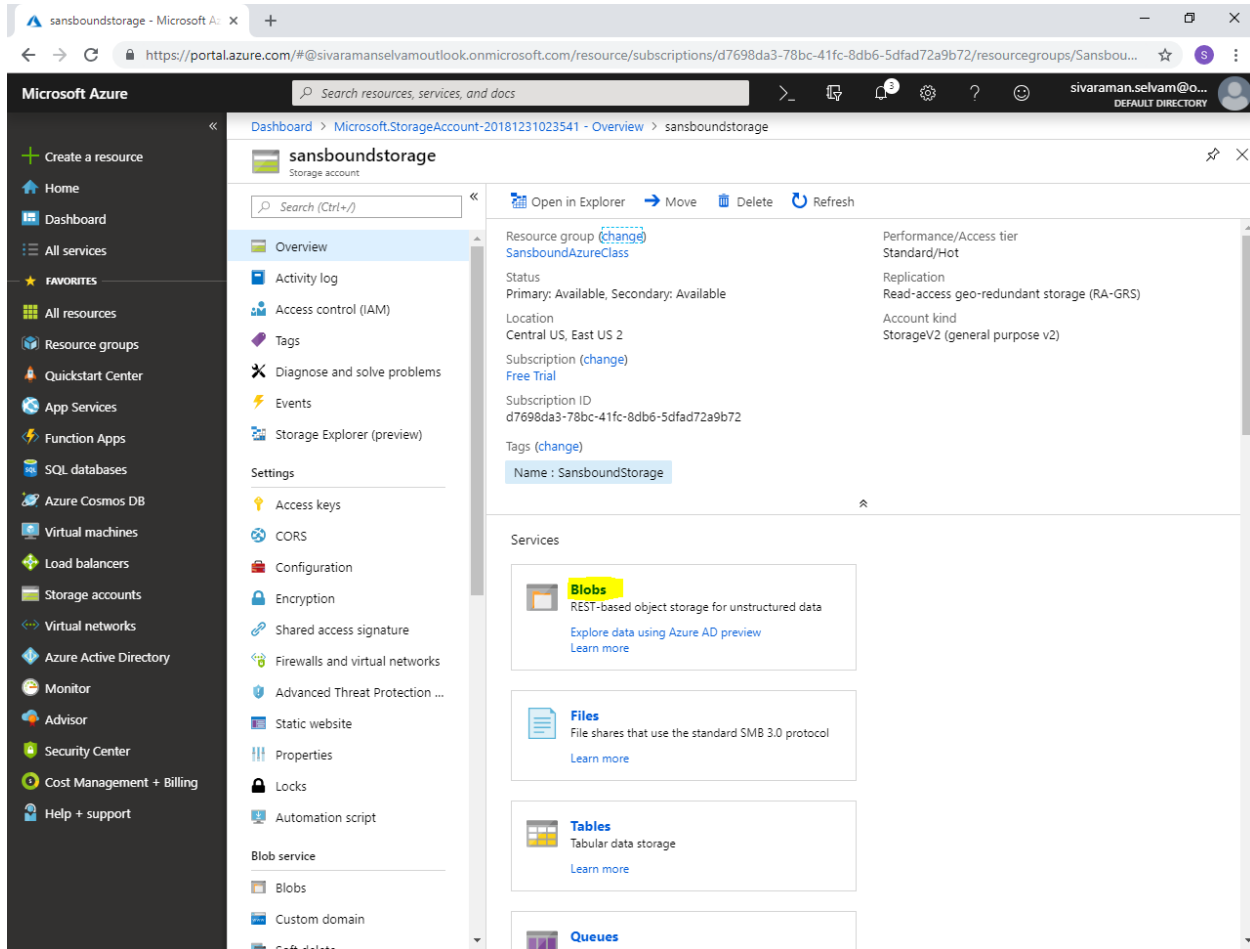
Additional Resources

- [Windows Server 2016 VM Quickstart tutorial](#)
- [Cosmos DB Quickstart tutorial](#)
- [Web App Quickstart tutorial](#)
- [SQL Database Quickstart tutorial](#)
- [Storage Account Quickstart tutorial](#)

Helpful Links

- [Get started with Azure](#)
- [Azure architecture center](#)

Click **"Blob"**.



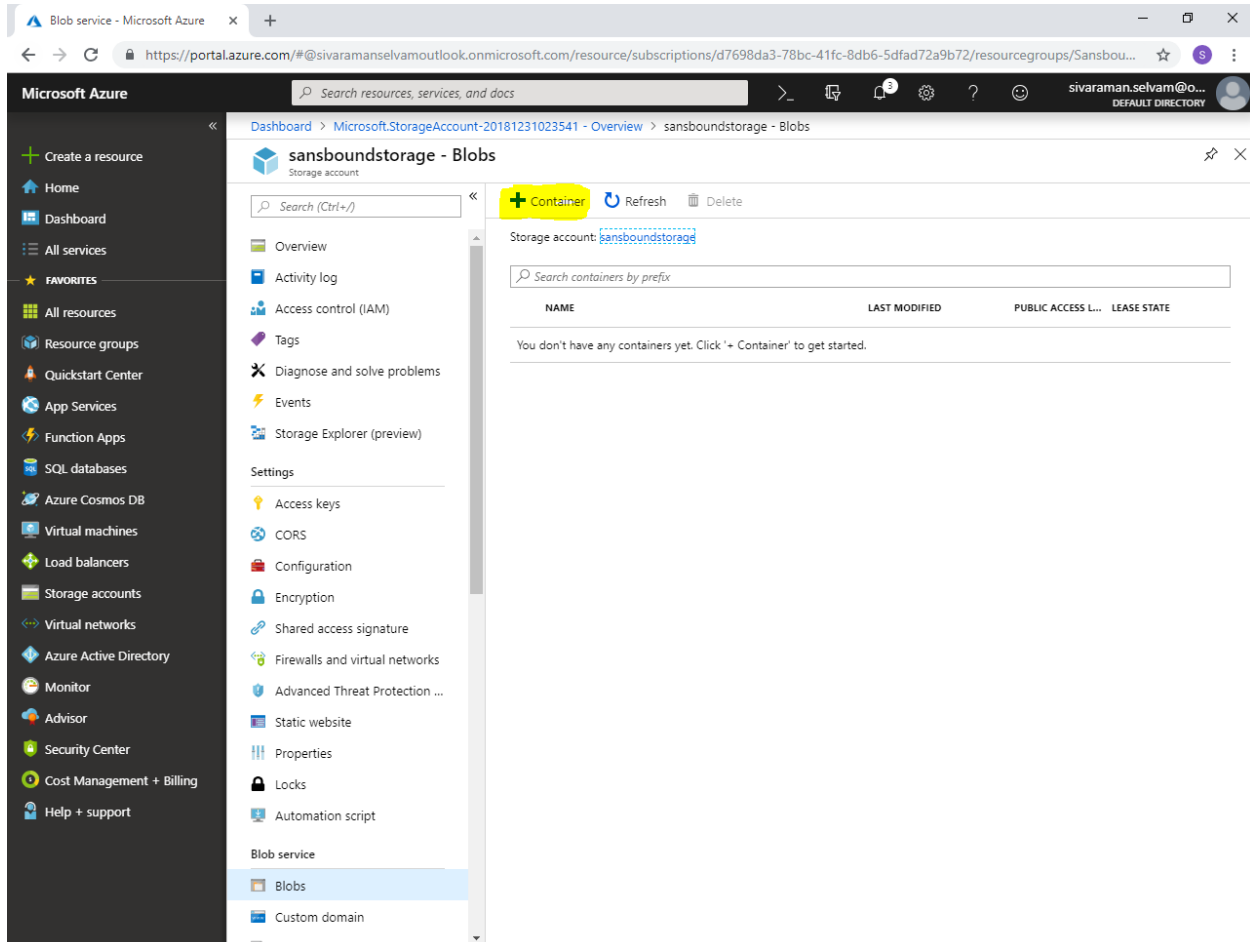
The screenshot displays the Microsoft Azure portal interface. The left-hand navigation pane shows the 'Overview' tab selected under the 'Storage accounts' section. The main content area shows the 'sansboundstorage' storage account overview. Key details include:

- Resource group:** SansboundAzureClass
- Status:** Primary: Available, Secondary: Available
- Location:** Central US, East US 2
- Subscription ID:** d7698da3-78bc-41fc-8db6-5dfad72a9b72
- Tags:** Name: SansboundStorage
- Performance/Access tier:** Standard/Hot
- Replication:** Read-access geo-redundant storage (RA-GRS)
- Account kind:** StorageV2 (general purpose v2)

Below the overview, the 'Services' section lists available storage services:

- Blobs:** REST-based object storage for unstructured data. Includes a link to 'Explore data using Azure AD preview' and 'Learn more'.
- Files:** File shares that use the standard SMB 3.0 protocol. Includes a 'Learn more' link.
- Tables:** Tabular data storage. Includes a 'Learn more' link.
- Queues:** (Partially visible)

Click **“Container”**.



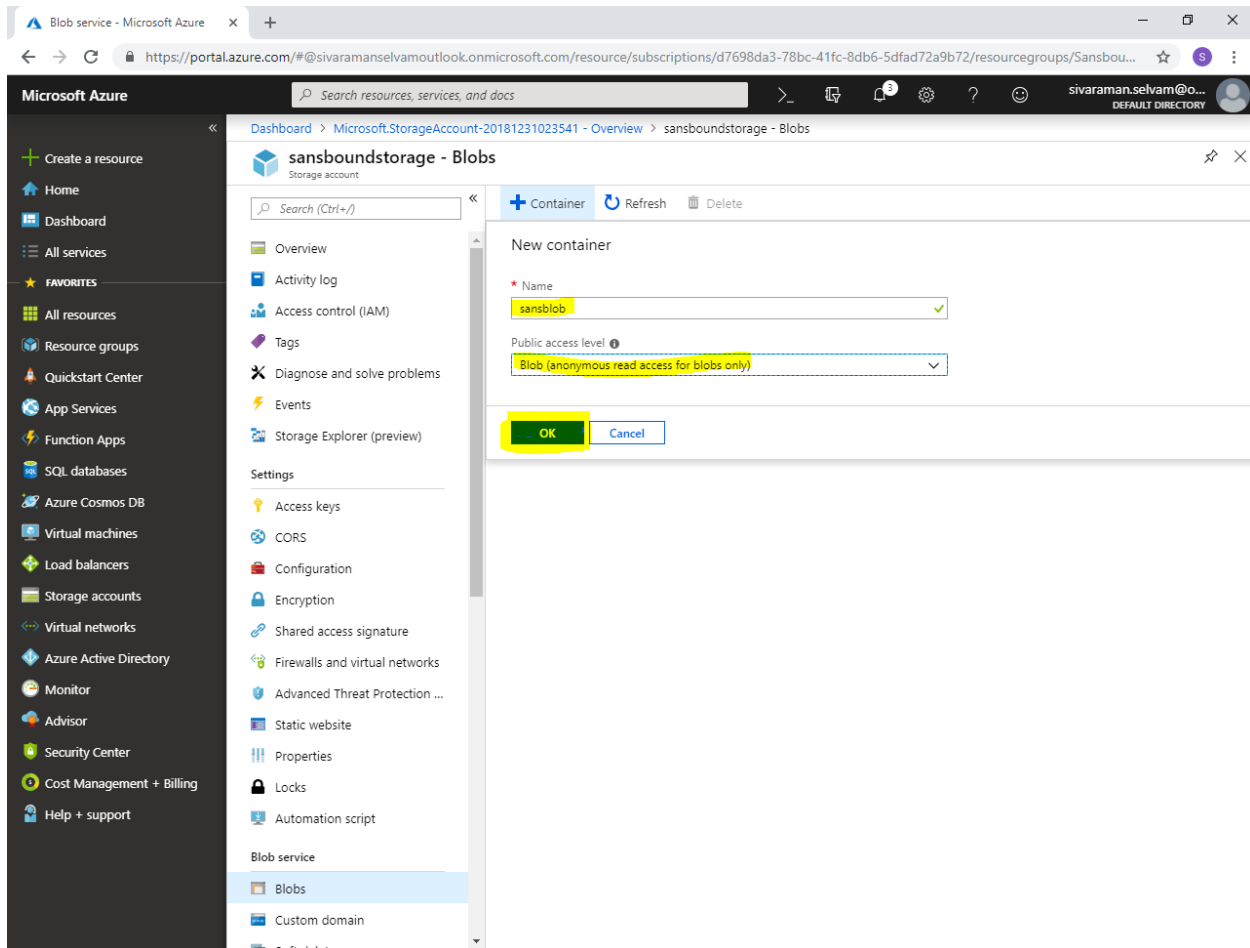
The screenshot shows the Microsoft Azure portal interface. The left sidebar contains the navigation menu with categories like 'Create a resource', 'Home', 'Dashboard', 'All services', 'FAVORITES', and various services including 'Storage accounts'. The 'Storage accounts' section is expanded, and the 'Blobs' option is selected. The main content area displays the 'sansboundstorage - Blobs' page. At the top of this page, there is a '+ Container' button highlighted in yellow, along with 'Refresh' and 'Delete' buttons. Below this, the storage account name 'sansboundstorage' is shown. A search bar for containers is present, followed by a table with columns: NAME, LAST MODIFIED, PUBLIC ACCESS L..., and LEASE STATE. The table is currently empty, with a message stating 'You don't have any containers yet. Click '+ Container' to get started.'

When create new container,

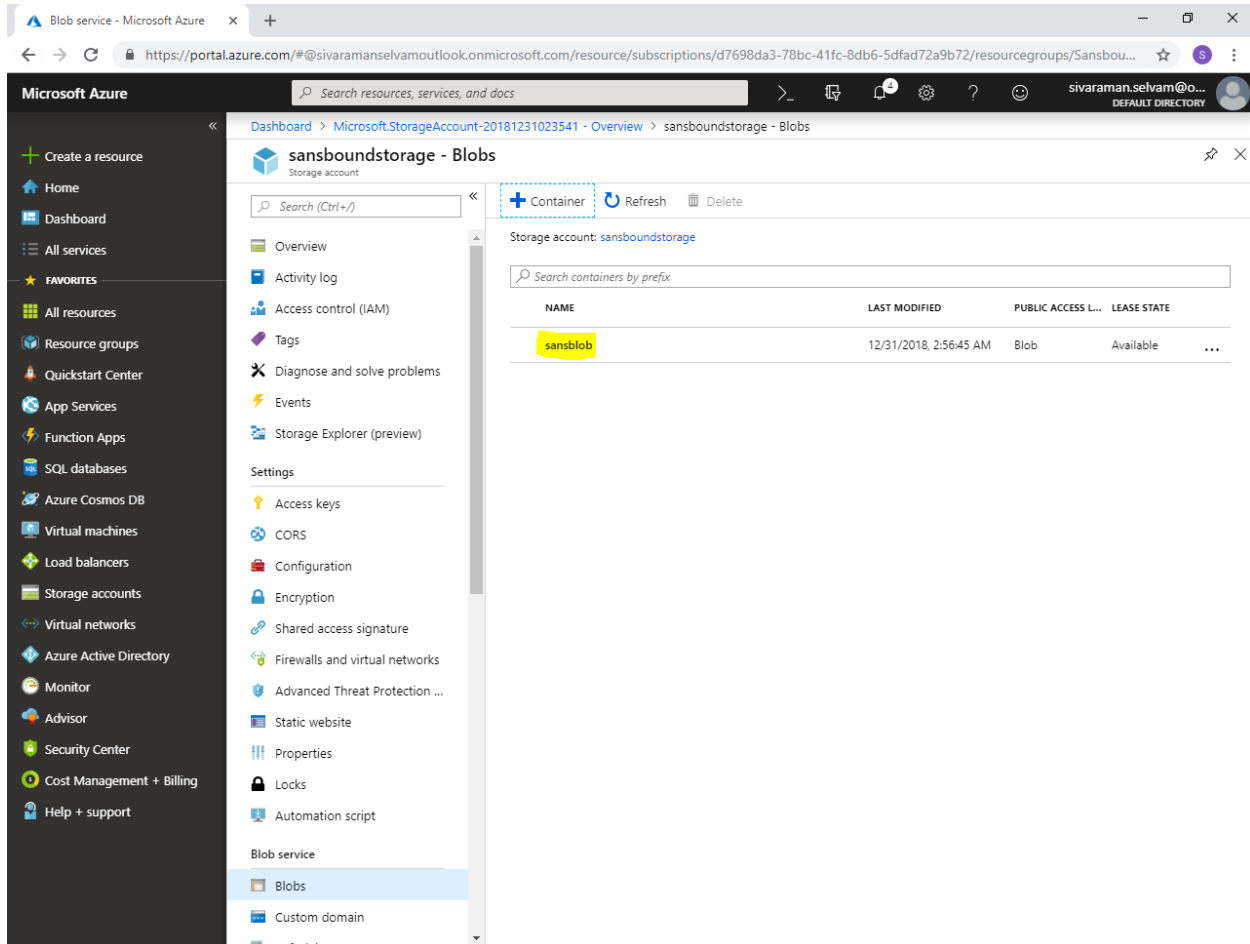
Type “Name” as “**sansblob**”.

Select “Public access level” as “**Blob**”.

Click “OK”.



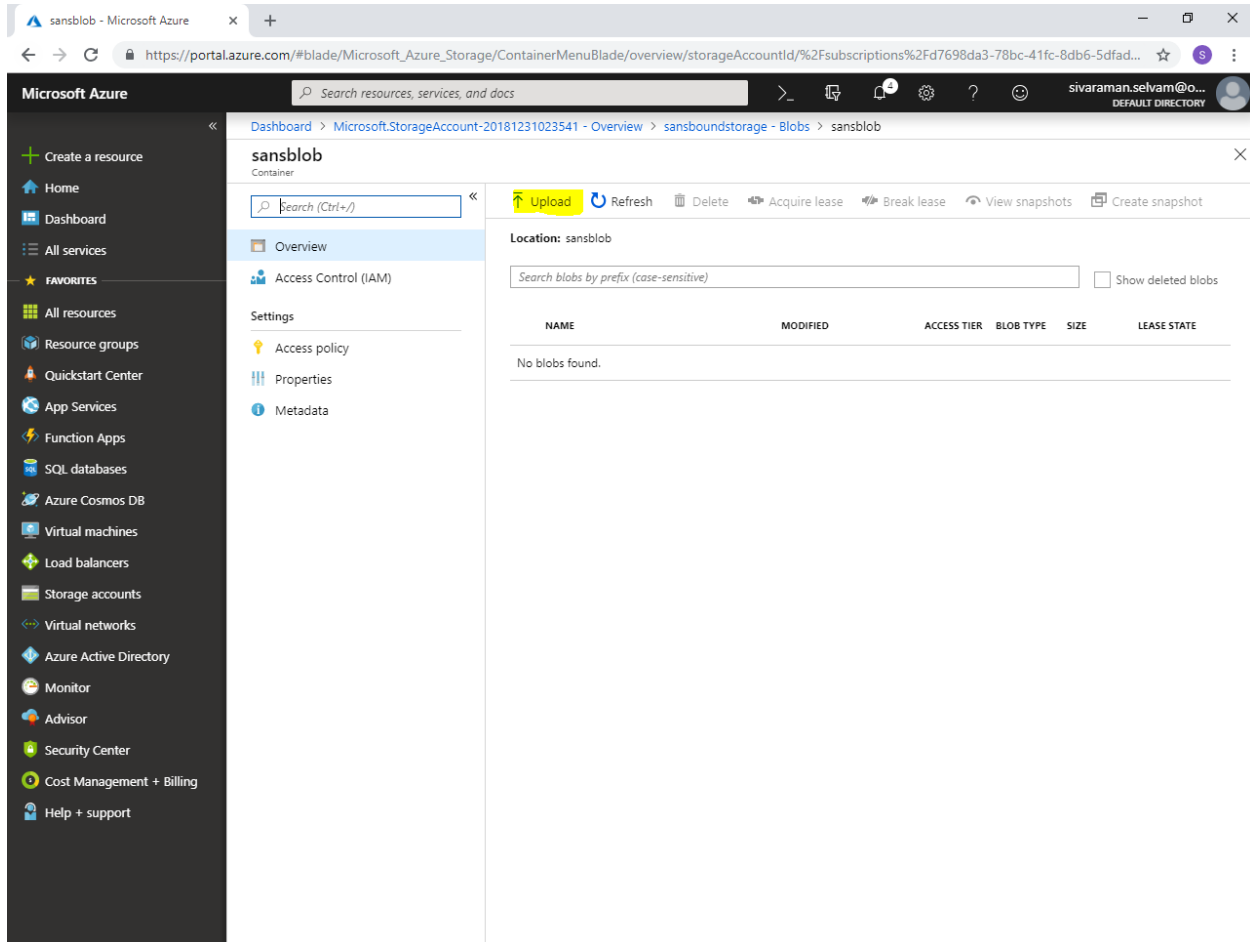
Click “**sansblob**”.



The screenshot shows the Microsoft Azure portal interface. The left-hand navigation pane is open, showing the 'Blob service' section with 'Blobs' selected. The main content area displays the 'sansboundstorage - Blobs' page. At the top, there are buttons for '+ Container', 'Refresh', and 'Delete'. Below this, a search bar for containers is present. A table lists the containers, with one entry named 'sansblob' highlighted. The table has columns for NAME, LAST MODIFIED, PUBLIC ACCESS L..., and LEASE STATE.

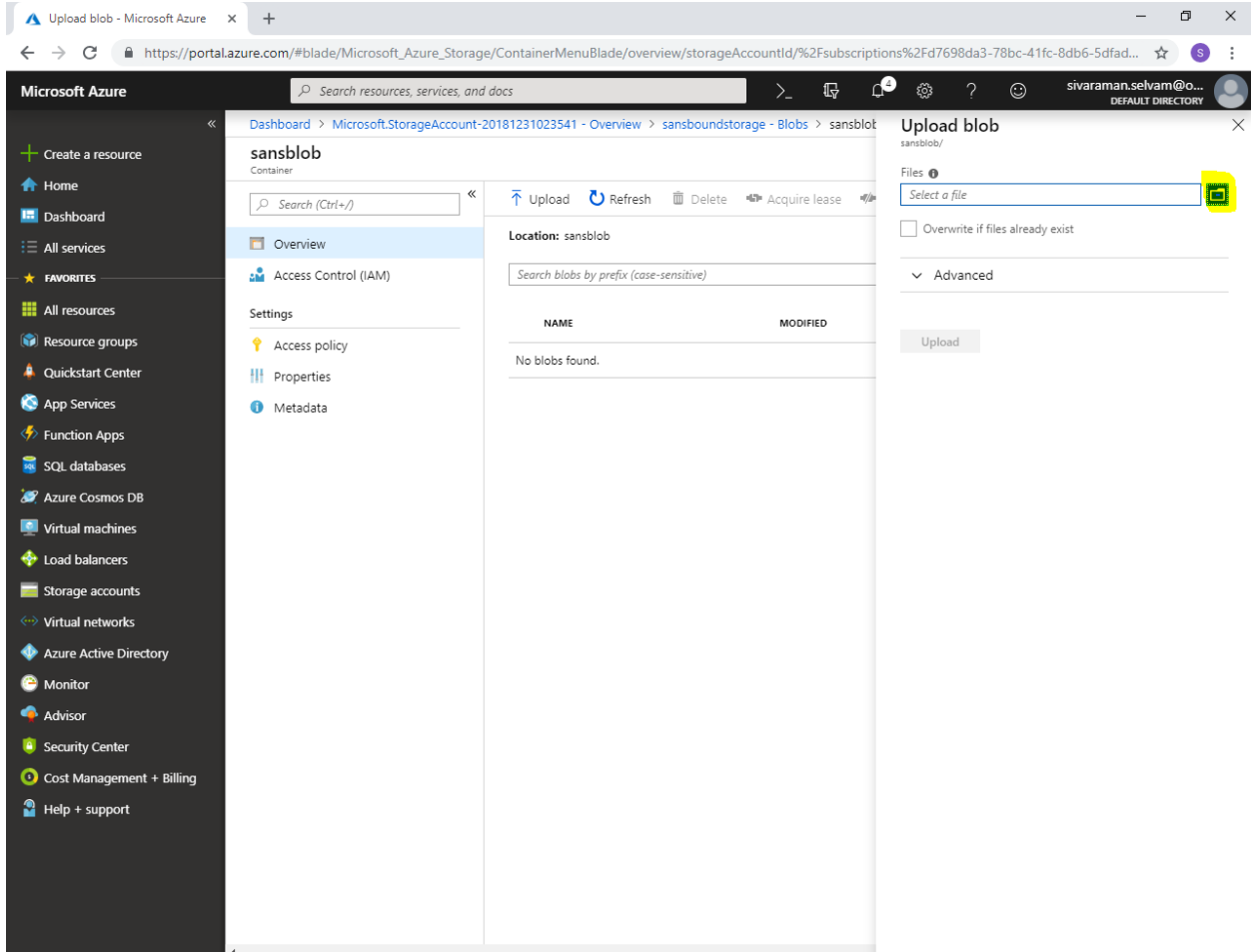
NAME	LAST MODIFIED	PUBLIC ACCESS L...	LEASE STATE
sansblob	12/31/2018, 2:56:45 AM	Blob	Available

Click **“Upload”**.



The screenshot shows the Microsoft Azure portal interface. The left sidebar contains the navigation menu with options like 'Create a resource', 'Home', 'Dashboard', 'All services', and 'FAVORITES'. The main content area displays the 'sansblob' container overview. The 'Upload' button is highlighted in yellow. Below the button, there is a search bar for blobs and a table with columns: NAME, MODIFIED, ACCESS TIER, BLOB TYPE, SIZE, and LEASE STATE. The table currently shows 'No blobs found.'

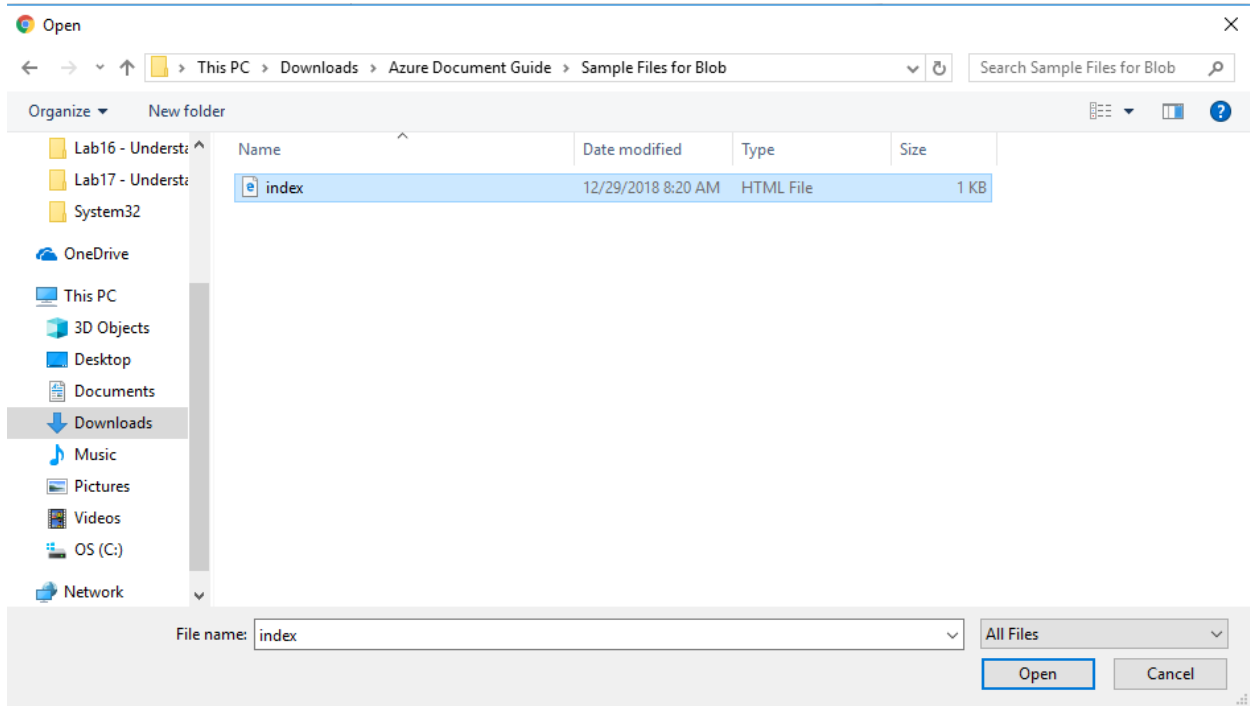
Click **"Icon"**.



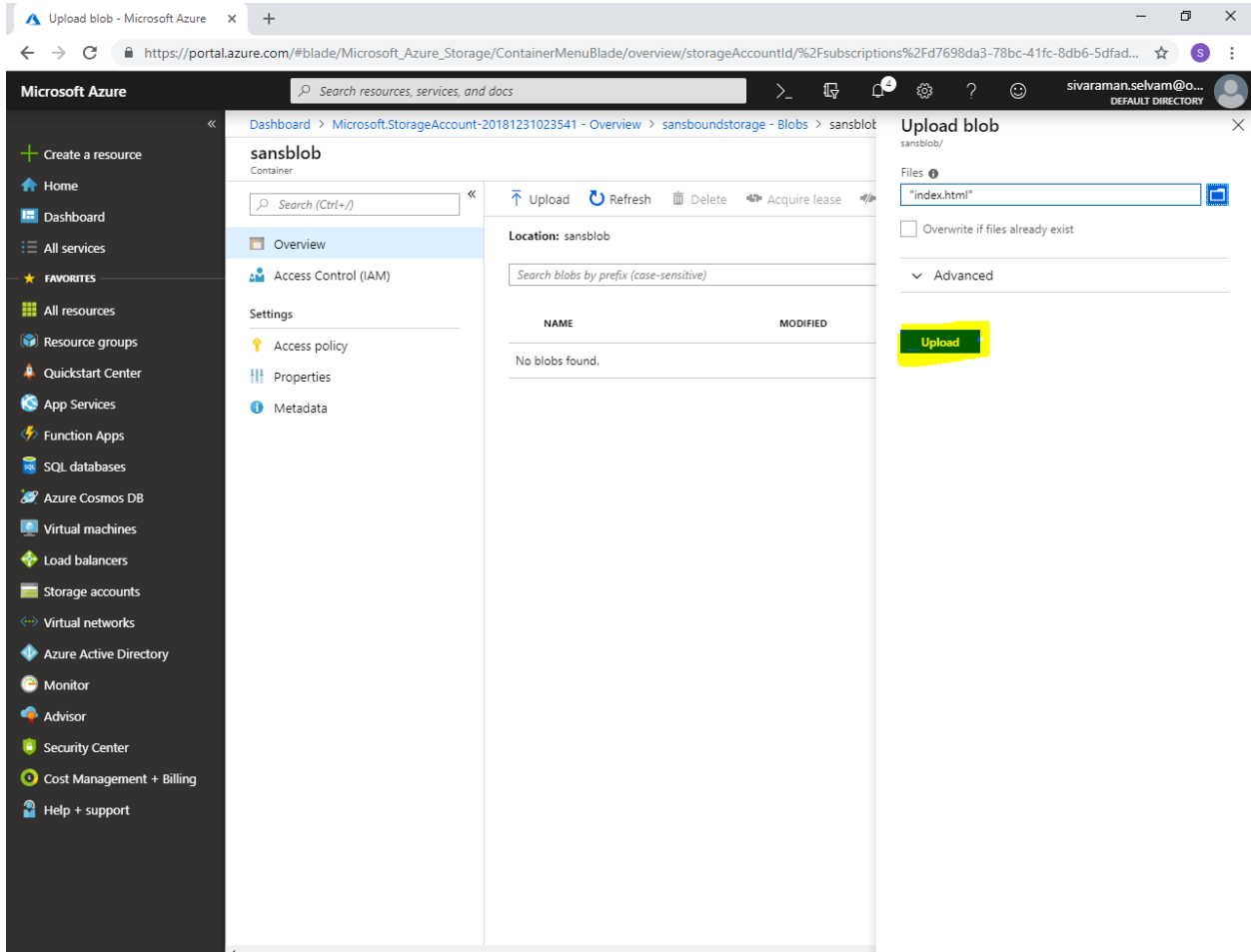
The screenshot shows the Microsoft Azure portal interface. The left sidebar contains the navigation menu with options like 'Create a resource', 'Home', 'Dashboard', 'All services', and 'FAVORITES'. The main area displays the 'sansblob' container overview. On the right, the 'Upload blob' dialog is open, showing a file selection interface with a 'Select a file' button and an 'Upload' button. The dialog also includes options for 'Overwrite if files already exist' and 'Advanced' settings.

Locate the path of **"Index.html"** file which you have required to upload.

Click **"Open"**.



Click **“Upload”**.



The screenshot shows the Microsoft Azure portal interface. On the left is a navigation pane with various service categories. The main area displays the 'sansblob' container overview. An 'Upload blob' dialog box is open on the right, showing a file named 'index.html' ready for upload. The 'Upload' button in the dialog is highlighted with a yellow box.

Microsoft Azure

Upload blob - Microsoft Azure

https://portal.azure.com/#blade/Microsoft_Azure_Storage/ContainerMenuBlade/overview/storageAccountId/%2Fsubscriptions%2Fd7698da3-78bc-41fc-8db6-5dfad...

Search resources, services, and docs

sivaraman.selvam@o...
DEFAULT DIRECTORY

Dashboard > Microsoft.StorageAccount-20181231023541 - Overview > sansboundstorage - Blobs > sansblob

sansblob
Container

Search (Ctrl+/)

Overview

Access Control (IAM)

Settings

Access policy

Properties

Metadata

Upload Refresh Delete Acquire lease

Location: sansblob

Search blobs by prefix (case-sensitive)

NAME	MODIFIED
No blobs found.	

Files

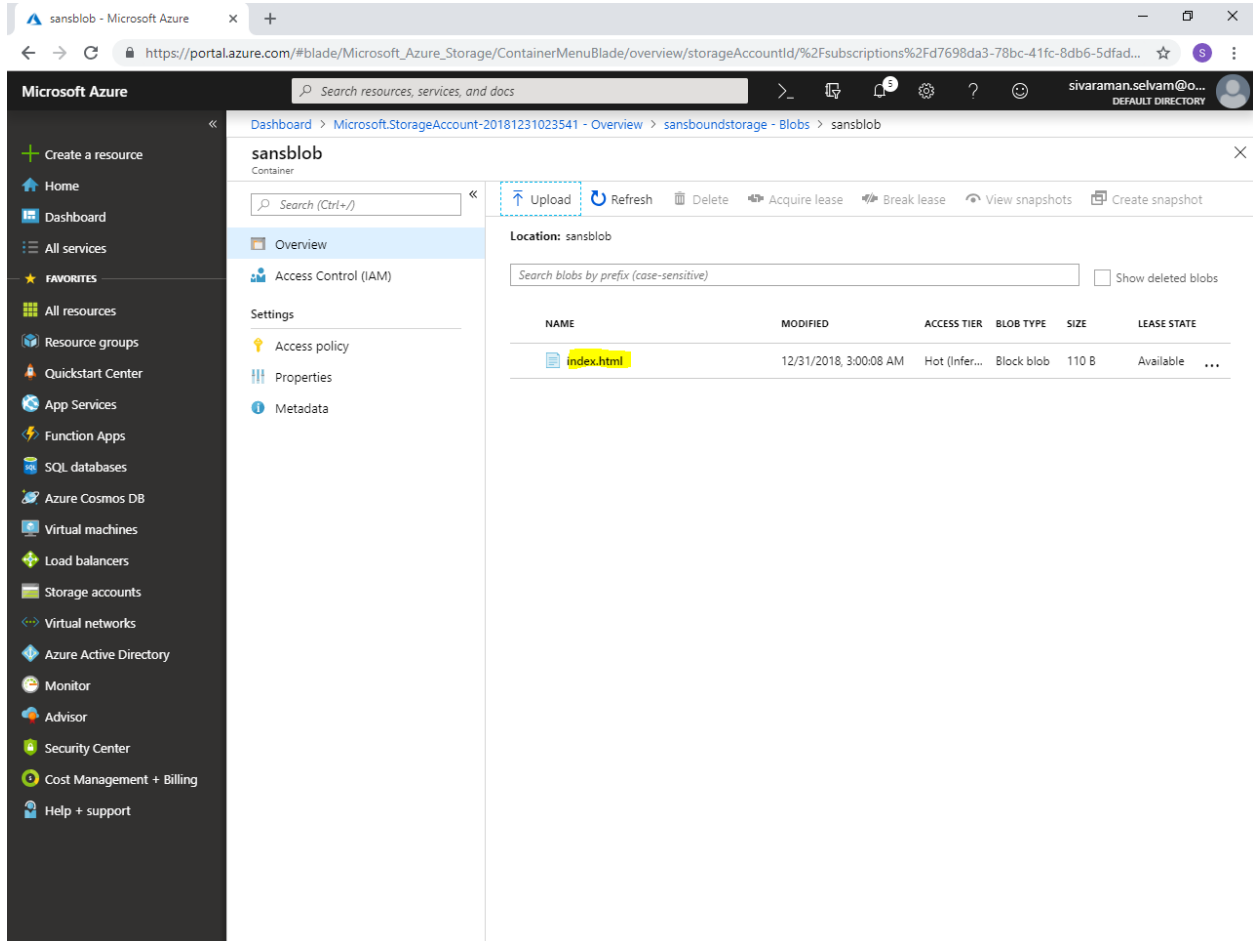
"index.html"

Overwrite if files already exist

Advanced

Upload

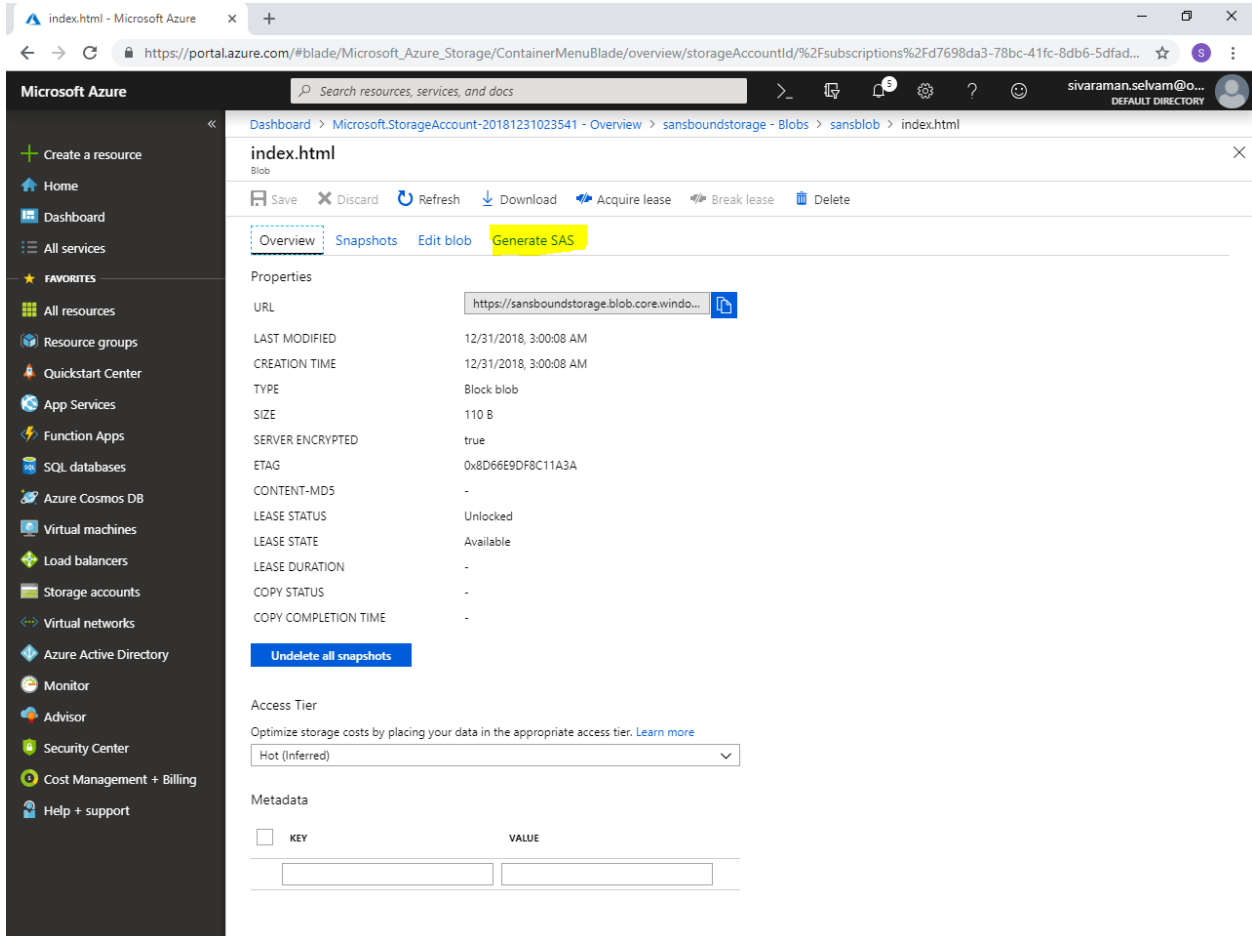
Click **"index.html"**.



The screenshot shows the Microsoft Azure portal interface. The left sidebar contains navigation links for various services. The main content area displays the 'sansblob' container. The 'Upload' button is highlighted with a dashed blue box. Below the container name, there is a search bar and a table of blobs. The table has columns: NAME, MODIFIED, ACCESS TIER, BLOB TYPE, SIZE, and LEASE STATE. One blob named 'index.html' is listed with a modified date of 12/31/2018, 3:00:08 AM, Hot (Infer...), Block blob, 110 B, and Available state.

NAME	MODIFIED	ACCESS TIER	BLOB TYPE	SIZE	LEASE STATE
index.html	12/31/2018, 3:00:08 AM	Hot (Infer...)	Block blob	110 B	Available

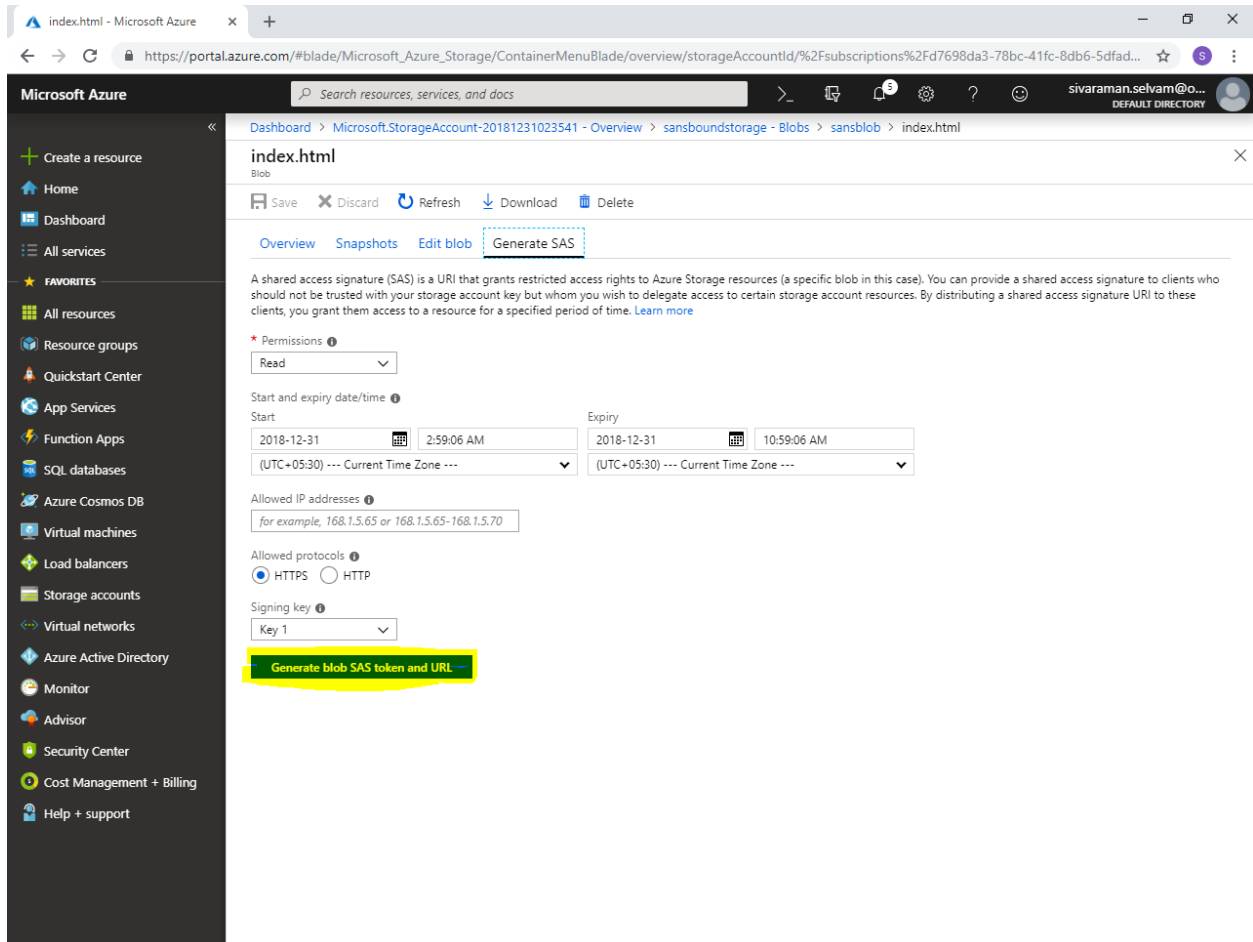
Click **“Generate SAS”**.



The screenshot shows the Microsoft Azure portal interface. The left sidebar contains navigation options like 'Create a resource', 'Home', 'Dashboard', 'All services', and 'FAVORITES'. The main content area displays the 'index.html' blob page. The breadcrumb trail at the top reads: Dashboard > Microsoft.StorageAccount-20181231023541 - Overview > sansboundstorage - Blobs > sansblob > index.html. Below the breadcrumb, the page title is 'index.html' with a sub-label 'Blob'. Action buttons include 'Save', 'Discard', 'Refresh', 'Download', 'Acquire lease', 'Break lease', and 'Delete'. A tab bar shows 'Overview' (selected), 'Snapshots', 'Edit blob', and 'Generate SAS' (highlighted in yellow). The 'Properties' section lists details such as URL, LAST MODIFIED, CREATION TIME, TYPE, SIZE, SERVER ENCRYPTED, ETAG, CONTENT-MD5, LEASE STATUS, LEASE STATE, LEASE DURATION, COPY STATUS, and COPY COMPLETION TIME. Below this is an 'Access Tier' section with a dropdown menu set to 'Hot (Inferred)'. At the bottom, there is a 'Metadata' section with a table for KEY and VALUE.

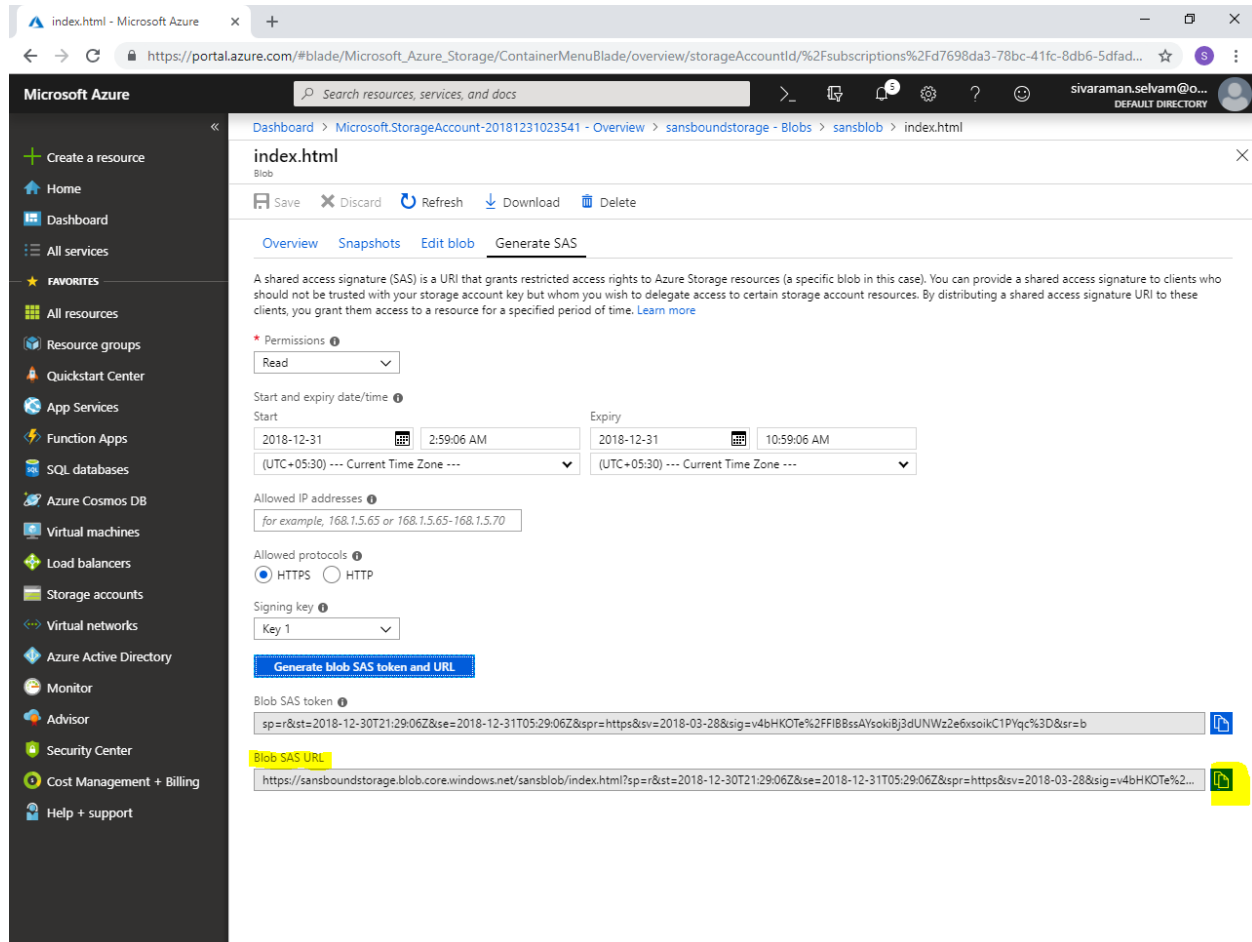
KEY	VALUE
<input type="text"/>	<input type="text"/>

Click **“Generate blob SAS token and URL”**.



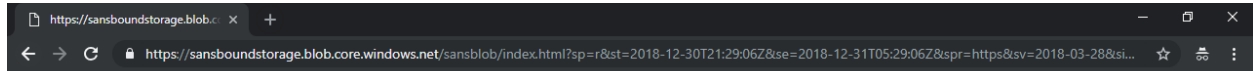
The screenshot shows the Microsoft Azure portal interface. The left sidebar contains navigation options like 'Create a resource', 'Home', 'Dashboard', 'All services', and 'FAVORITES'. The main content area displays the 'index.html' blob page. The 'Generate SAS' tab is selected, showing a form to configure a shared access signature. The form includes fields for 'Permissions' (set to 'Read'), 'Start' and 'Expiry' dates and times, 'Allowed IP addresses', 'Allowed protocols' (with 'HTTPS' selected), and 'Signing key' (set to 'Key 1'). A yellow box highlights the 'Generate blob SAS token and URL' button at the bottom of the form.

Click **"Icon"** to copy the Blob SAS URL.



The screenshot shows the Microsoft Azure portal interface. The left sidebar contains navigation options like 'Create a resource', 'Home', 'Dashboard', 'All services', and 'FAVORITES'. The main content area displays the 'index.html' blob page with tabs for 'Overview', 'Snapshots', 'Edit blob', and 'Generate SAS'. The 'Generate SAS' tab is active, showing a form to generate a shared access signature (SAS). The form includes fields for 'Permissions' (set to 'Read'), 'Start' and 'Expiry' dates/times, 'Allowed IP addresses', 'Allowed protocols' (set to 'HTTPS'), and 'Signing key' (set to 'Key 1'). A blue button labeled 'Generate blob SAS token and URL' is visible. Below the form, the 'Blob SAS token' and 'Blob SAS URL' are displayed. The 'Blob SAS URL' is highlighted with a yellow background, and a yellow icon (a document with a checkmark) is shown next to it, indicating it can be copied.

Paste the Blob SAS URL in browser and press **“Enter”**.



Welcome to Sansbound Azure Blob page

Note: You have got the page successfully. In case of Region -1 goes down then read only copy of the data will be available in Region -2.