

# Tutorial S2: Blob storage container

Creating a storage account in Azure will allow you to create containers of stored data that you can mount onto their machines.

This tutorial covers how to do the following steps through the Azure desktop portal:

1. Create a **storage account**\*\*
2. Create a **storage container** within the storage account
3. Look at data within the storage container
4. Read and write data to the storage container using azcopy
5. Get storage account name and key (for NotebookS4)

\*\*The settings you select when creating the storage account are extremely important to make sure it is easily accessible later.

1. Creating a storage account

# Create a storage account ...

- Basics
- Advanced
- Networking
- Data protection
- Encryption
- Tags
- Review

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 about Azure storage accounts](#)

## Project details

Select the subscription in which to create the new storage account. Choose a new or existing resource group to organize and manage your storage account together with other resources.

Subscription \*

Zoe\_Krauss

Resource group \*

krausszoe

[Create new](#)

Review

< Previous

Next : Advanced >

 Give feedback

## Create a storage account ...

Basics Advanced Networking Data protection Encryption Tags Review

Description

Resource group \*  [Create new](#)

### Instance details

If you need to create a legacy storage account type, please click [here](#).

Storage account name ⓘ \*   
✖ The value must not be empty.

Region ⓘ \*  [Deploy to an edge zone](#)

Performance ⓘ \*

Review

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 Give feedback

We want to create a legacy storage account type, which makes it easier to access shared file storage. Click here.

## Create storage account ...

### Project details

Select the subscription in which to create the new storage account. Choose a new or existing resource group to organize and manage your storage account together with other resources.

Subscription \*

Zoe\_Krauss



Resource group \*

krausszoe



[Create new](#)

### Instance details

Storage account name \* ⓘ

seismicloud3



Location \*

(US) West US 2



Performance ⓘ

☒ Standard ☐ Premium

Account kind ⓘ

StorageV2 (general purpose v2)



Replication ⓘ

Locally-redundant storage (LRS)



[Review + create](#)

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[Next : Networking >](#)

Name it whatever you like and tie it to your desired resource group.

For Replication, select either “Locally Redundant Storage” or “Zone Redundant Storage”.

Home > Create a resource > Marketplace > Storage account > Create a storage account >

## Create storage account ...

Basics **Networking** Data protection Advanced Tags Review + create

### Network connectivity

You can connect to your storage account either publicly, via public IP addresses or service endpoints, or privately, using a private endpoint.

- Connectivity method \*
- ☐ Public endpoint (all networks)
  - ☒ Public endpoint (selected networks)
  - ☐ Private endpoint

### Virtual networks

Only the selected network will be able to access this storage account. [Learn more about service endpoints](#)

Virtual network subscription ⓘ

Virtual network ⓘ

[Create virtual network](#)  
[Manage selected virtual network](#)

Subnets \* ⓘ

Review + create

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Next : Data protection >

Under networking, select  
“Public endpoint (selected  
networks)”

Select the virtual network you  
will be working in, with the  
default subnet.

Default Microsoft network  
routing is fine.

## Create storage account ...


Basics Networking Data protection Advanced Tags Review + create

### Security

Require secure transfer for REST API operations  ☐ Disabled ☒ Enabled


Allow storage account key access  ☐ Disabled ☒ Enabled

Minimum TLS version   

Infrastructure encryption  ☒ Disabled ☐ Enabled

### Blob storage

Allow Blob public access  ☐ Disabled ☒ Enabled

Blob access tier (default)  ☐ Cool ☒ Hot

NFS v3  ☐ Disabled ☒ Enabled

### Data Lake Storage Gen2

Hierarchical namespace  ☐ Disabled ☒ Enabled

### Azure Files

Large file shares  ☒ Disabled ☐ Enabled

### Tables and Queues

Customer-managed keys support  ☒ Disabled ☐ Enabled

Data Protection selections can be left as default. Navigate to Advanced, and select the options shown to the left.

**Make sure NFS v3 is enabled!**  
**This is how we will be accessing containers in the storage account.**

Review & create.

## 2. Create a storage container

Great! Now we have a storage account set up with the proper permissions and abilities enabled.

Now, we have to create a container within the account in which to actually store data.



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

Home > Storage accounts > seismiccloud

## Storage accounts

UW (cloud.washington.edu)

+ Create ↶ Restore ...

Filter for any field...

Name ↑↓

- seismiccloud
- seismiccloud2

seismiccloud | Containers

Storage account

Search

+ Container Change access level Restore container

Search New container prefix

Show deleted containers

Name	Last modified	Public access level
<input type="checkbox"/> \$logs	1/20/2023, 3:07:57 PM	Private
<input type="checkbox"/> seismiccloud	1/20/2023, 3:12:53 PM	Private

Overview

Activity log

Tags

Diagnose and solve problems

Access Control (IAM)

Data migration

Events

Storage browser

Data storage

- Containers
- File shares
- Queues
- Tables

Security + networking

Page 1 of 1

Click on your storage account, and then “Containers” on the sidebar. Add a new container.

Name it anything you like, and specify “Container” as the public access level.

### New container

Name \*

seismiccloud3

Public access level ⓘ

Container (anonymous read access for containers and blobs)



All container and blob data can be read by anonymous request. Clients can enumerate blobs within the container by anonymous request, but cannot enumerate containers within the storage account. Anonymous access bypasses Access Control List (ACL) settings.

Advanced

3. Look at data in storage  
account

Once your container is created, you can navigate to it and see what's inside.

Microsoft Azure

Search resources, services, and docs (G+)

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UW (CLOUD.WASHINGTON.EDU)

Home > seismiccloud2

seismiccloud2 | Containers

Storage account

Search

Container Change access level Restore containers Refresh Delete Give feedback

Search containers by prefix

Show deleted containers

Name	Last modified	Public access level	Lease state
<input type="checkbox"/> seismiccloud	2/3/2023, 9:37:32 AM	Container	Available

Overview

Activity log

Tags

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Containers

File shares

Queues

Tables

Security + networking

Within the storage account, navigate to "Containers" to see a list of containers you have.

Click on your container of interest to see what's inside!

If you see this screen or a similar error message when you click on your container, you'll need to edit the "Networking" settings of the Storage Account itself. See next slide...

Microsoft Azure

Search resources, services, and docs (G+)

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UW (CLOUD.WASHINGTON.EDU)

Home > seismiccloud2 | Containers >

seismiccloud  
Container

Search

Overview

Diagnose and solve problems

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Settings

Shared access tokens

Manage ACL

Access policy

Properties

Metadata

This request is not authorized to perform this operation.

Summary

Session ID	79e301041fd547049518df255c6dd94e	Resource ID	/subscriptions/f387c92a-68b5-4d09-8497-e3a4a7199af...
Extension	Microsoft_Azure_Storage	Content	BlobsBlade
Error code	403	Storage Request ID	0103b189-001e-0023-5e75-8a8ee0000000

Details

- This request is not authorized to perform this operation. RequestId:0103b189-001e-0023-5e75-8a8ee0000000 Time:2023-05-19T17:18:29.4585787Z
- This storage account's 'Firewalls and virtual networks' settings may be blocking access to storage services. Trv

On the page for the Storage Account, navigate to “Networking” on the side bar and scroll down to the Firewall section.

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

Home > seismicloud2

seismicloud2 | Networking Storage account

Search

Storage browser

Data storage

- Containers
- File shares
- Queues
- Tables

Security + networking

- Networking
- Access keys
- Shared access signature
- Encryption
- Microsoft Defender for Cloud

Data management

- Redundancy

**Firewall**

Add IP ranges to allow access from the internet or your on-premises networks. [Learn more.](#)

Address range
75.172.164.18
205.175.106.67
205.175.106.16
205.175.106.6
205.175.106.114
205.175.118.148
205.175.118.225
205.175.118.224
205.175.106.100
IP address or CIDR

**Resource instances**

Specify resource instances that will have access to your storage account based on their system-assigned managed identity.

Resource type	Instance name
---------------	---------------

Navigate to “Networking”

Here enter your current public IP address.

To check your current public IP, you can use the command:  
>> curl ifconfig.me

Continued on next slide...

After typing in your Public IP Address, scroll up and hit “Save”.

The screenshot shows the Microsoft Azure portal interface. At the top, the header includes the Microsoft Azure logo, a search bar, and user information (zkrauss@uw.edu). The left sidebar shows the navigation menu with categories like Data storage, Security + networking, and Data management. The 'Networking' option is selected. The main content area shows the 'Firewalls and virtual networks' settings for the 'seismiccloud2' storage account. The 'Public network access' section has three radio buttons: 'Enabled from all networks', 'Enabled from selected virtual networks and IP addresses' (which is selected), and 'Disabled'. Below this is a link to 'Configure network security for your storage accounts'. The 'Virtual networks' section has two buttons: 'Add existing virtual network' and 'Add new virtual network'. Below these is a table with columns: Virtual Network, Subnet, Address range, Endpoint Status, Resource Group, and Subscription. The table contains one row with the values: > krausszoe\_vnet, 1, (empty), (empty), krausszoe, and Zoe\_Krauss. Below the table is the 'Firewall' section with the text 'Add IP ranges to allow access from the internet or your on-premises networks. Learn more.' and a table with columns: Address range and (empty). The table contains one row with the value 75.172.164.18. A red line points from the text 'Here!' to the 'Save' button in the 'Firewalls and virtual networks' section.

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

Home > seismiccloud2

seismiccloud2 | Networking Storage account

Search

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Security + networking

- Networking
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- Microsoft Defender for Cloud

Data management

- Redundancy

Firewalls and virtual networks Private endpoint connections

Save Discard Refresh Here!

Public network access

- ☐ Enabled from all networks
- ☒ Enabled from selected virtual networks and IP addresses
- ☐ Disabled

Configure network security for your storage accounts. [Learn more](#)

Virtual networks

- + Add existing virtual network + Add new virtual network

Virtual Network	Subnet	Address range	Endpoint Status	Resource Group	Subscription
> krausszoe_vnet	1			krausszoe	Zoe_Krauss

Firewall

Add IP ranges to allow access from the internet or your on-premises networks. [Learn more.](#)

Address range
75.172.164.18

It sometimes takes a few seconds for the new networking settings to take effect, but you should now be able to access your container through “Containers” in the side bar.

Once you successfully have access into the container page, you will see a screen like this. You can click on different folders and navigate through files in the same way you would a laptop!

Microsoft Azure

Search resources, services, and docs (G+/)

1

?

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Home > seismiccloud2 | Containers >

seismiccloud

Container

Search

«

Upload

Add Directory

Refresh

Rename

Delete

Change tier

Acquire lease

Break lease

Give feedback

Overview

Diagnose and solve problems

Access Control (IAM)

Settings

Shared access tokens

Manage ACL

Access policy

Properties

Metadata

Authentication method:

Access key ([Switch to Azure AD User Account](#))

Location:

seismiccloud

Search blobs by prefix (case-sensitive)

Show deleted objects

Name	Modified	Access tier	Archive status	Blob type	Size
<input type="checkbox"/> endeavour					
<input type="checkbox"/> ml_output					
<input type="checkbox"/> mloutput_2016					
<input type="checkbox"/> mloutput_2017					
<input type="checkbox"/> outputs					

## 4. Write and read data to/from the storage container

There are several ways to do this, but the we found that the easiest and most straightforward was using Azure's azcopy Command Line Interface (CLI).



You can interact with the storage container using a CLI called azcopy, which you must install from Azure.

<https://learn.microsoft.com/en-us/azure/storage/common/storage-use-azcopy-files>

To write data *to* the storage container, the command has the form:

```
>> azcopy copy "<local directory to copy>"
```

```
"https://{storage_account_name}.blob.core.windows.net/{storage_container_name}?{sas_token}" -- recursive=True
```

The command to read data *from* the storage container is nearly the same, but with the filepaths switched. To read data from the storage container, the command has the form:

```
>> azcopy copy "https://{storage_account_name}.blob.core.windows.net/{storage_container_name}/path/to/copy/{sas_token}"
```

```
"<local path to copy to>" -- recursive=True
```

The passed argument `--recursive=True` is unnecessary if you are only reading or writing one file.

The storage account name and storage container name you already have. Remember that we made a storage container *inside* the storage account! To get the SAS token for the storage container, check out the next slide...

Home > Storage accounts > seismiccloud | Containers > seismiccloud

## seismiccloud | Shared access tokens

Container

Search

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Metadata

Signing method  
☒ Account key ☐ User delegation key

Signing key  
Key 1

Stored access policy  
None

Permissions \*  
4 selected

Start and expiry date/time

Start  
01/20/2023 3:16:44 PM

(UTC-08:00) Pacific Time (US & Canada)

Expiry  
03/15/2023 11:16:44 PM

(UTC-08:00) Pacific Time (US & Canada)

Allowed IP addresses  
10.19.253.40

1. Click on the storage container you just created.

3. Select the permissions appropriate for what you'll want to do. **Most commonly, read and write.**

4. Specify how long you'll want this token (like a password) to last for you.

5. Input the IP address you plan to access the storage container from. (Note: you can also leave this blank. **But, make sure that the IP address you will use is allowed under /Networking in the Storage account settings.**)

2. Navigate to "Shared access tokens" on the sidebar.

6. Generate the token. This is used in the azcopy command, and you should save and keep in a safe place.

## Common problems when trying to write data to the storage container using azcopy...







- Copy and pasting the azcopy command (quotation marks get screwed up).
- Make sure you specified the correct permissions when generating the SAS token: Read AND Write!
- “Description=This request is not authorized to perform this operation.”
  - Permission / authentication errors- in this case you want to check on the storage **account** under “Networking” and make sure the IP address you are trying to read/write from is allowed. Make sure to “save” your changes here!
  - The command “>> curl ifconfig.me” will print your current public IP address.

5. Get storage account  
name and key

# Navigate to your storage account


Microsoft Azure

Search resources, services, and docs (G+)



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Home > seismiccloud2

 **seismiccloud2** | Access keys

☆ ...

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Security + networking

Networking

**Access keys**

Shared access signature

Encryption

Microsoft Defender for Cloud

Data management

Set rotation reminder

Refresh

Give feedback

Access keys authenticate your applications' requests to this storage account. Keep your keys in a secure location like Azure Key Vault, and replace them often with new keys. The two keys allow you to replace one while still using the other.

Remember to update the keys with any Azure resources and apps that use this storage account.  
[Learn more about managing storage account access keys](#)

Storage account name

seismiccloud2

key1

Rotate key

Last rotated: 2/3/2023 (103 days ago)

Key

.....

Show

key2

Rotate key

Last rotated: 2/3/2023 (103 days ago)

Key

.....

Show

Scroll down to Security & Networking, and click on "Access keys"

Your **storage account name** is here

And your **storage account key** is here. Copy it and save it to a secure place.