✓ 100 XP ▶

Manage Azure Blob storage

8 minutes

Azure Blob storage is a suitable repository for holding large binary objects, such as images, video, and audio files. In the Contoso scenario, you've created a blob container for holding images of the products the company manufactures.

Azure currently supports three different types of blobs; *Block blobs*, *Page blobs*, and *Append blobs*. You typically use page blobs to implement virtual disk storage for Azure virtual machines; they're optimized to support random read and write operations. Append blobs are suitable for storing data that grows in chunks, such as logs or other archive data. Block blobs are best for static data, and are the most appropriate type of storage for holding the image data held by Contoso.

In this unit, you'll learn how to create and manage blobs, and the containers that hold them.

ⓘ Note

This unit concentrates on using the Azure portal, the Azure CLI, and Azure PowerShell for managing blobs and blob storage. You can also use the **AzCopy** utility to upload and download files, including blobs. The next unit describes how to use **AzCopy**.

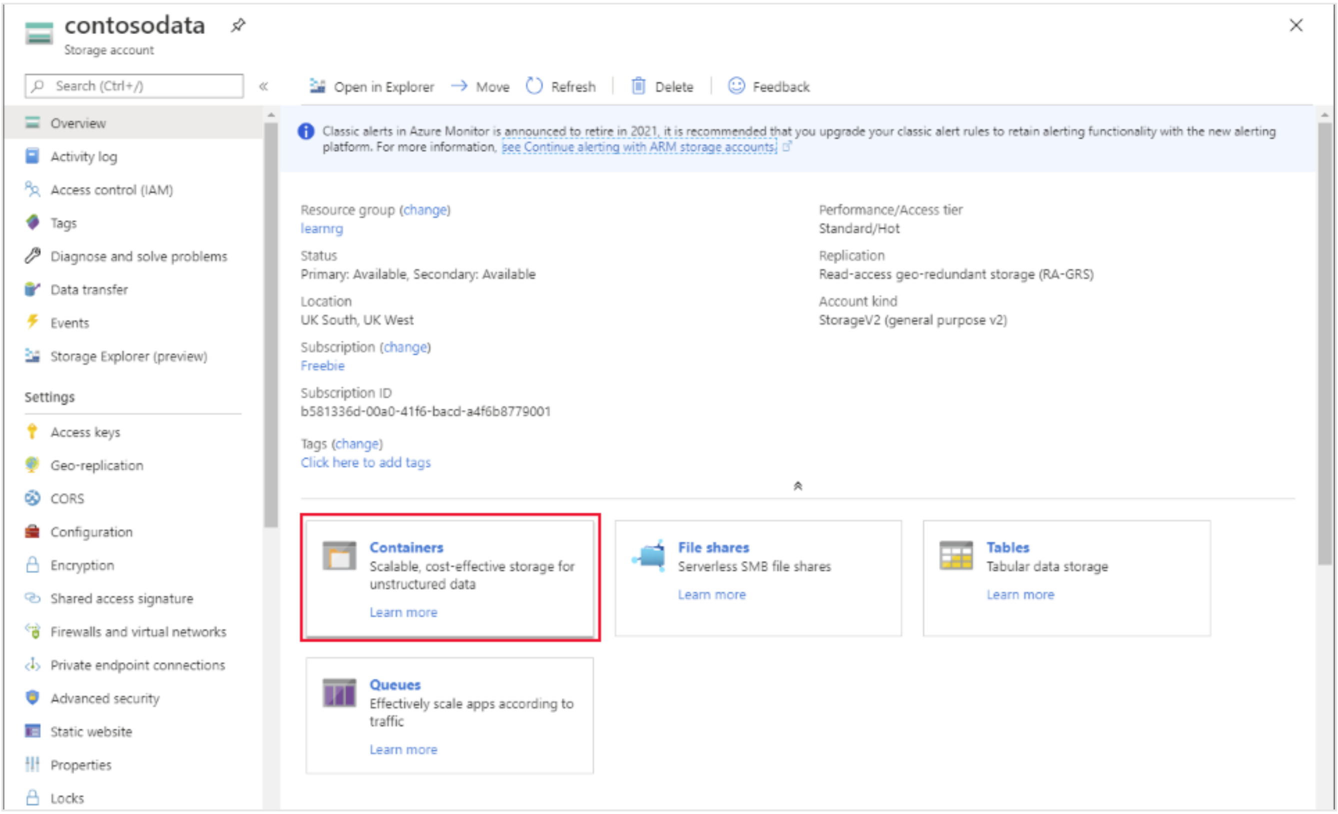
Create an Azure Storage container

In an Azure storage account, you store blobs in *containers*. A container provides a convenient way of grouping related blobs together, and you can organize blobs in a hierarchy of folders inside a container, similar to files in a file system on disk.

You create a container in an Azure Storage account. You can do this using the Azure portal, or using the Azure CLI or Azure PowerShell from the command line.

Use the Azure portal

In the Azure portal, go to the **Overview** page for your Azure Storage account, and select **Containers**.



Classic alerts in Azure Monitor is announced to retire in 2021, it is recommended that you upgrade your classic alert rules to retain alerting functionality with the new alerting platform. For more information, see Continue alerting with ARM storage accounts.

Resource group (change)
learnrg

Status
Primary: Available, Secondary: Available

Location
UK South, UK West

Subscription (change)
Freebie

Subscription ID
b581336d-00a0-41f6-bacd-a4f6b8779001

Tags (change)
Click here to add tags

Performance/Access tier
Standard/Hot

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

Account kind
StorageV2 (general purpose v2)

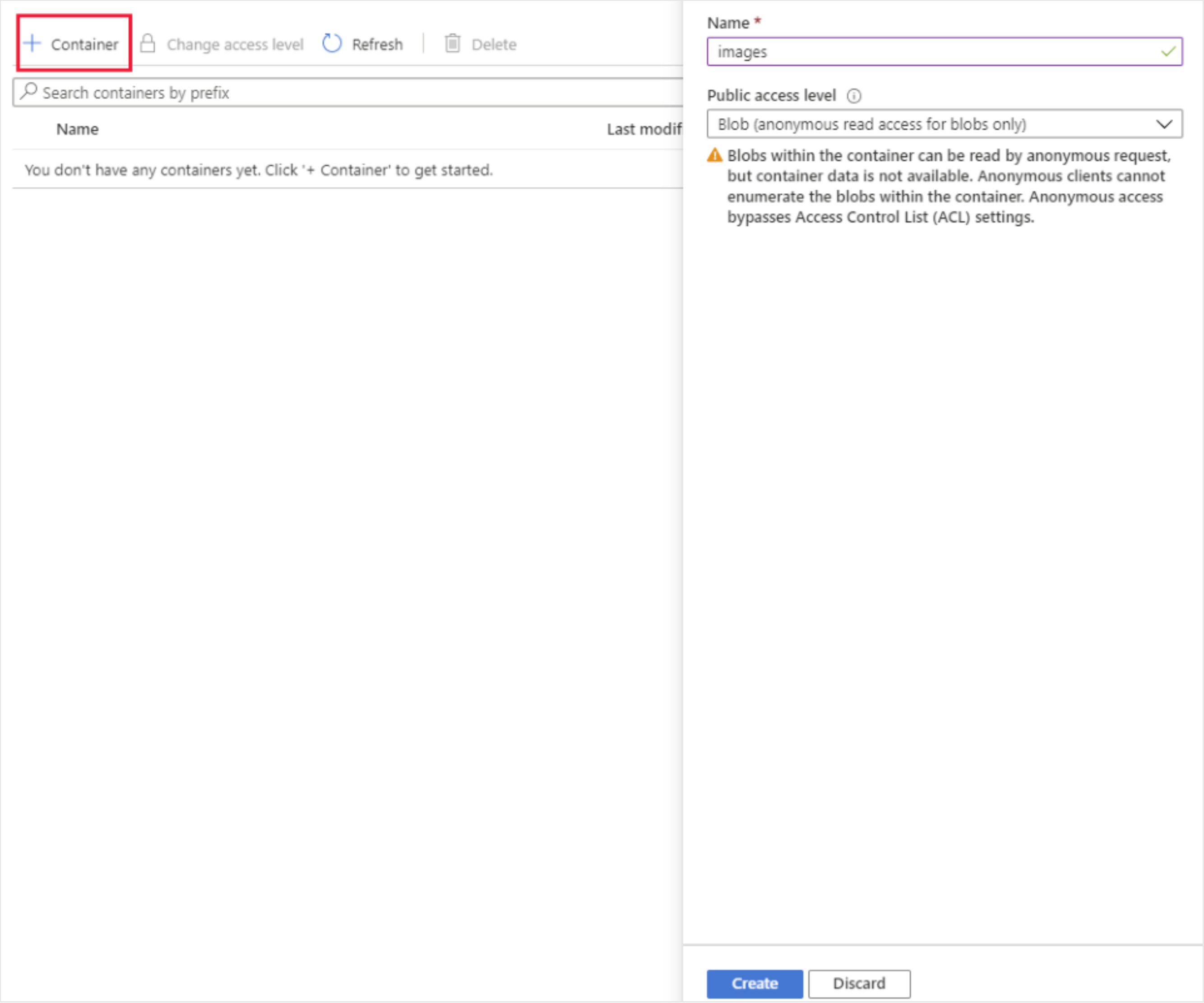
Containers
Scalable, cost-effective storage for unstructured data
Learn more

File shares
Serverless SMB file shares
Learn more

Tables
Tabular data storage
Learn more

Queues
Effectively scale apps according to traffic
Learn more

On the **Containers** page, select **+ Container**, and provide a name for the new container. You can also specify the public access level. For a container that will be used to hold blobs, the most appropriate access level is **Blob**. This setting supports anonymous read-only access for blobs. However, unauthenticated clients can't list the blobs in the container. This means they can only download a blob if they know its name and location within the container.



You don't have any containers yet. Click '+ Container' to get started.

Name *
images

Public access level
Blob (anonymous read access for blobs only)

Blobs within the container can be read by anonymous request, but container data is not available. Anonymous clients cannot enumerate the blobs within the container. Anonymous access bypasses Access Control List (ACL) settings.

Use the Azure CLI

If you prefer to use the Azure CLI, the `az storage container create` command creates a new container. This command takes a number of optional parameters, and you can find the full details on the az storage container create page on the Microsoft website. The example below creates a container named *images* for storing blobs. The container is created in a storage account named *contosodata*. The container provides anonymous blob access.

Azure CLI

Copy

```
az storage container create \
  --name images \
  --account-name contosodata \
  --resource-group contoso-group \
  --public-access blob
```

Use Azure PowerShell

You can use the `New-AzStorageContainer` PowerShell cmdlet to create a new storage container. The details are available on the New-AzStorageContainer page on the Microsoft website. You must first obtain a reference to the storage account using the `Get-AzStorageAccount` command. The code below shows an example:

PowerShell

```powershell
Get-AzStorageAccount `
  -ResourceGroupName "contoso-group" `
  -Name "contosodata" | New-AzStorageContainer `
    -Name "images" `
    -Permission Blob
```

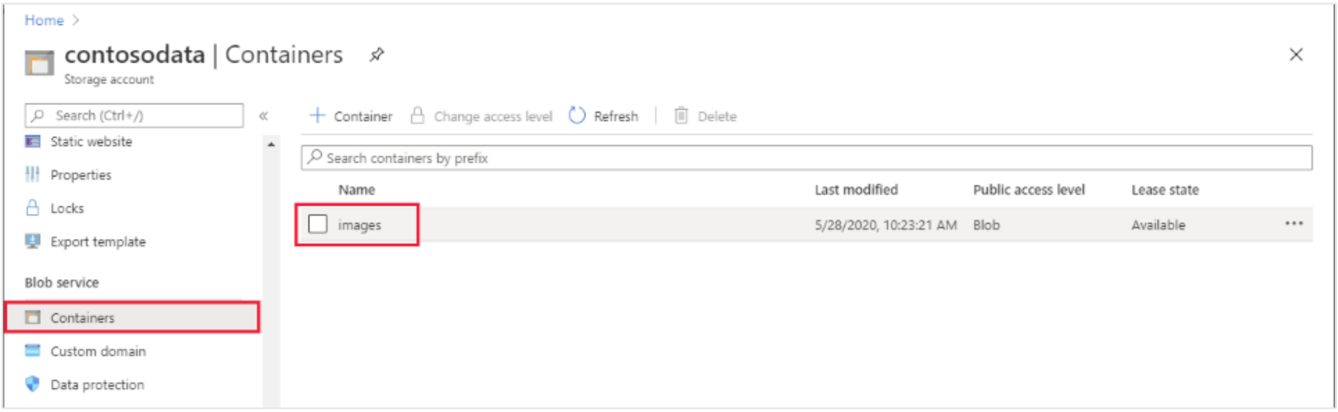
Upload a blob to Azure Storage

After you've created a container, you can upload blobs. Depending on how you want to organize your blobs, you can also create folders in the container.

Use the Azure portal

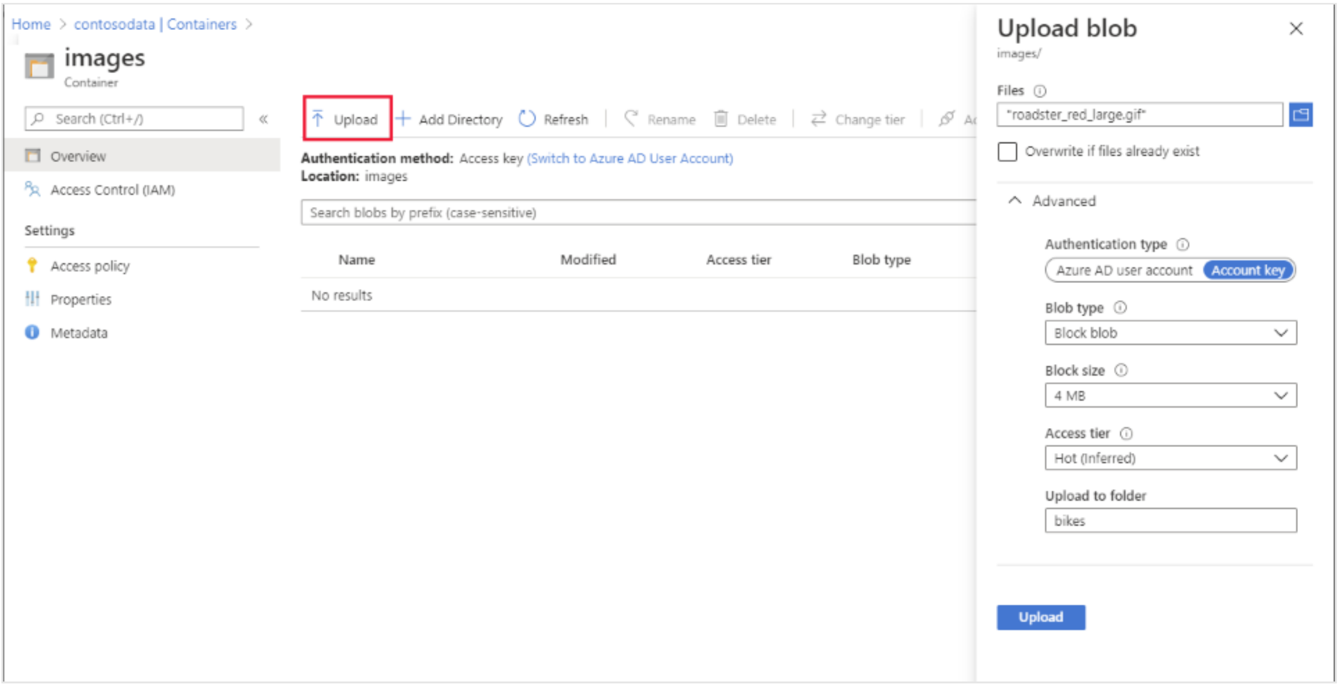
If you're using the Azure portal, go to the page for your storage account and select **Containers** under **Blob service**. On the **Containers** page, select the container you want to use.

> **Note**
>
> If you created the storage account with support for hierarchical namespaces (for Data Lake Storage), the **Blob service** section doesn't appear in the Azure portal. Instead, select **Containers** under **Data Lake Storage**.



Name	Last modified	Public access level	Lease state
□ images	5/28/2020, 10:23:21 AM	Blob	Available

On the page for the container, in the toolbar, select **Upload**. In the **Upload blob** dialog box, browse to the file container the data to upload. The **Advanced** drop-down section provides options you can modify the default options. For example, you can specify the name of a folder in the container (the folder will be created if it doesn't exist), the type of blob, and the access tier. The blob that is created is named after the file you uploaded.



Authentication method: Access key (Switch to Azure AD User Account)
Location: images

No results

Files: "roadster_red_large.gif"

□ Overwrite if files already exist

Authentication type: ○ Azure AD user account ● Account key

Blob type: Block blob

Block size: 4 MB

Access tier: Hot (Inferred)

Upload to folder: bikes

> **Note**
>
> You can select multiple files. They will each be uploaded into seperate blobs.

Use the Azure CLI

Use the `az storage blob upload` command to upload a file to a blob in a container. The details describing the parameters for this command are available on the az storage blob upload page on the Microsoft website. The following example uploads a local file named *racer_green_large.gif* in the *data* folder to a blob called *racer_green* in the *bikes folder in the *images* container in the *contosodata* storage account.

Azure CLI

```
az storage blob upload \
  --container-name images \
  --account-name contosodata \
  --file "\data\racer_green_large.gif" \
  --name "bikes\racer_green"
```

If you need to upload several files, use the `az storage blob upload-batch` command. This command takes the name of a local folder rather than a file name, and uploads the files in that folder to separate blobs. The example below uploads all *gif* files in the *data* folder to the *bikes* folder in the *images* container.

Azure CLI Copy

```
az storage blob upload-batch \
  --account-name contosodata \
  --source "\data" \
  --pattern "*.gif" \
  --destination "images\bikes"
```

Use Azure PowerShell

Azure PowerShell provides the Set-AzStorageBlobContent cmdlet to upload blob data to Azure storage, as follows:

PowerShell Copy

```
Get-AzStorageAccount `
  -ResourceGroupName "contoso-group" `
  -Name "contosodata" | Set-AzStorageBlobContent `
    -Container "images" `
    -File "\data\racer_green_large.gif" `
    -Blob "bikes\racer_green"
```

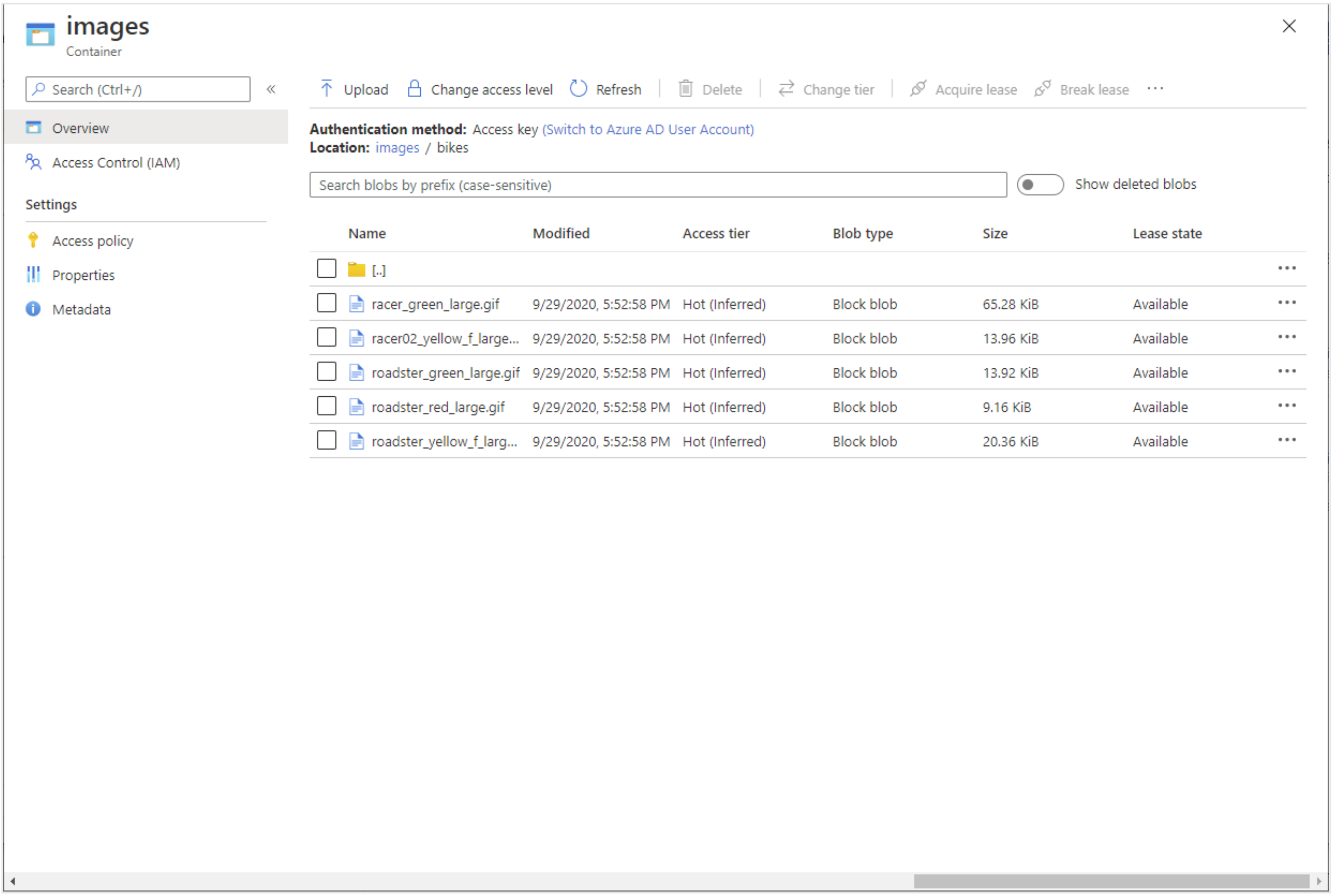
Azure PowerShell doesn't currently include a batch blob upload command. If you need to upload multiple files, you can write your own PowerShell script (use the `Get-ChildItem` cmdlet) to iterate through the files and upload each one individually.

List the blobs in a container

If you've been granted the appropriate access rights, you can view the blobs in a container.

Use the Azure portal

If you're using the Azure portal, go to the page for your storage account and select **Containers** under **Blob service**. On the **Containers** page, select the container holding your blobs. If the container has a folder structure, move to the folder containing the blobs you want to see. The blobs in that folder should be displayed.



Authentication method: Access key (Switch to Azure AD User Account)
Location: images / bikes

	Name	Modified	Access tier	Blob type	Size	Lease state
□	[..]					
□	racer_green_large.gif	9/29/2020, 5:52:58 PM	Hot (Inferred)	Block blob	65.28 KiB	Available
□	racer02_yellow_f_large...	9/29/2020, 5:52:58 PM	Hot (Inferred)	Block blob	13.96 KiB	Available
□	roadster_green_large.gif	9/29/2020, 5:52:58 PM	Hot (Inferred)	Block blob	13.92 KiB	Available
□	roadster_red_large.gif	9/29/2020, 5:52:58 PM	Hot (Inferred)	Block blob	9.16 KiB	Available
□	roadster_yellow_f_larg...	9/29/2020, 5:52:58 PM	Hot (Inferred)	Block blob	20.36 KiB	Available

Use the Azure CLI

In the Azure CLI, you can use the az storage blob list command to view the blobs in a container. This command iterates recursively through any folders in the container. The example below lists the blobs previously uploaded to the images container:

Azure CLI Copy

```
az storage blob list \
  --account-name contosodata \
  --container-name "images"
```

Use Azure PowerShell

From Azure PowerShell, run the Get-AzStorageBlob cmdlet, as illustrated in the following example:

PowerShell Copy

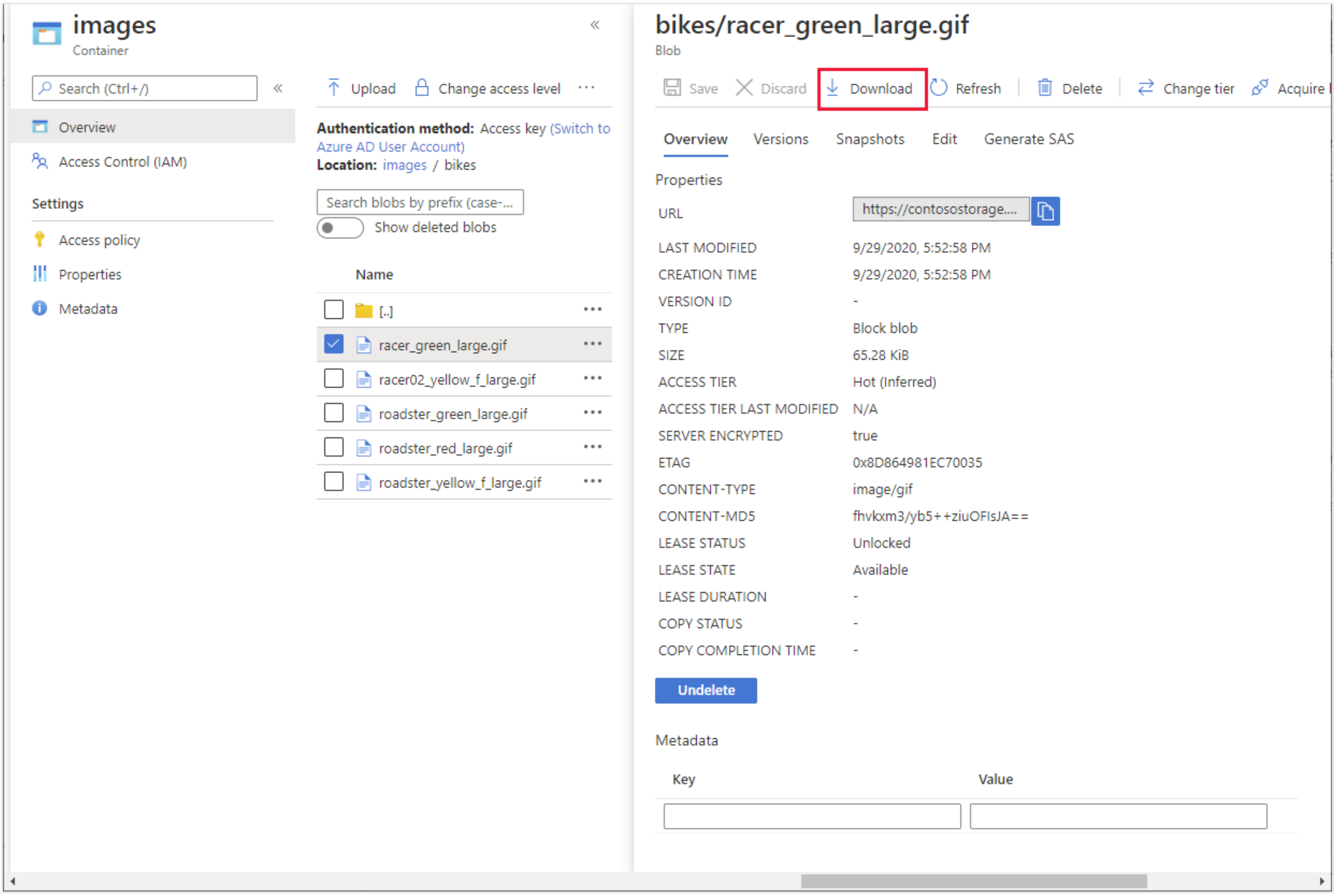
```
Get-AzStorageAccount `
  -ResourceGroupName "contoso-group" `
  -Name "contosodata" | Get-AzStorageBlob `
    -Container "images"
```

Download a blob from a container

You can retrieve a blob from Azure Storage and save it in a local file on your computer.

Use the Azure portal

If you're using the Azure portal, go to the page for your storage account and select **Containers** under **Blob service**. On the **Containers** page, select the container holding your blobs. If the container has a folder structure, move to the folder containing the blobs you want to download. Select the blob to view its details. On the details page, select **Download**.



Authentication method: Access key (Switch to Azure AD User Account)
Location: images / bikes

Search blobs by prefix (case-...

○ Show deleted blobs

	Name
□	[..]
☑	racer_green_large.gif
□	racer02_yellow_f_large.gif
□	roadster_green_large.gif
□	roadster_red_large.gif
□	roadster_yellow_f_large.gif

Properties

URL	https://contosostorage....
LAST MODIFIED	9/29/2020, 5:52:58 PM
CREATION TIME	9/29/2020, 5:52:58 PM
VERSION ID	-
TYPE	Block blob
SIZE	65.28 KiB
ACCESS TIER	Hot (Inferred)
ACCESS TIER LAST MODIFIED	N/A
SERVER ENCRYPTED	true
ETAG	0x8D864981EC70035
CONTENT-TYPE	image/gif
CONTENT-MD5	fhvkxm3/yb5++ziuOFIsJA==
LEASE STATUS	Unlocked
LEASE STATE	Available
LEASE DURATION	-
COPY STATUS	-
COPY COMPLETION TIME	-

Metadata

Key	Value

Use the Azure CLI

The Azure CLI provides the az storage blob download and az storage blob download-batch commands. These commands are analogous to those available for uploading blobs. The example below retrieves the *racer_green*" blob from the *bikes* folder in the *images* container.

Azure CLI Copy

```
az storage blob download \
  --container-name images \
  --account-name contosodata \
  --file "racer_green_large.gif" \
  --name "bikes\racer_green"
```

Use Azure PowerShell

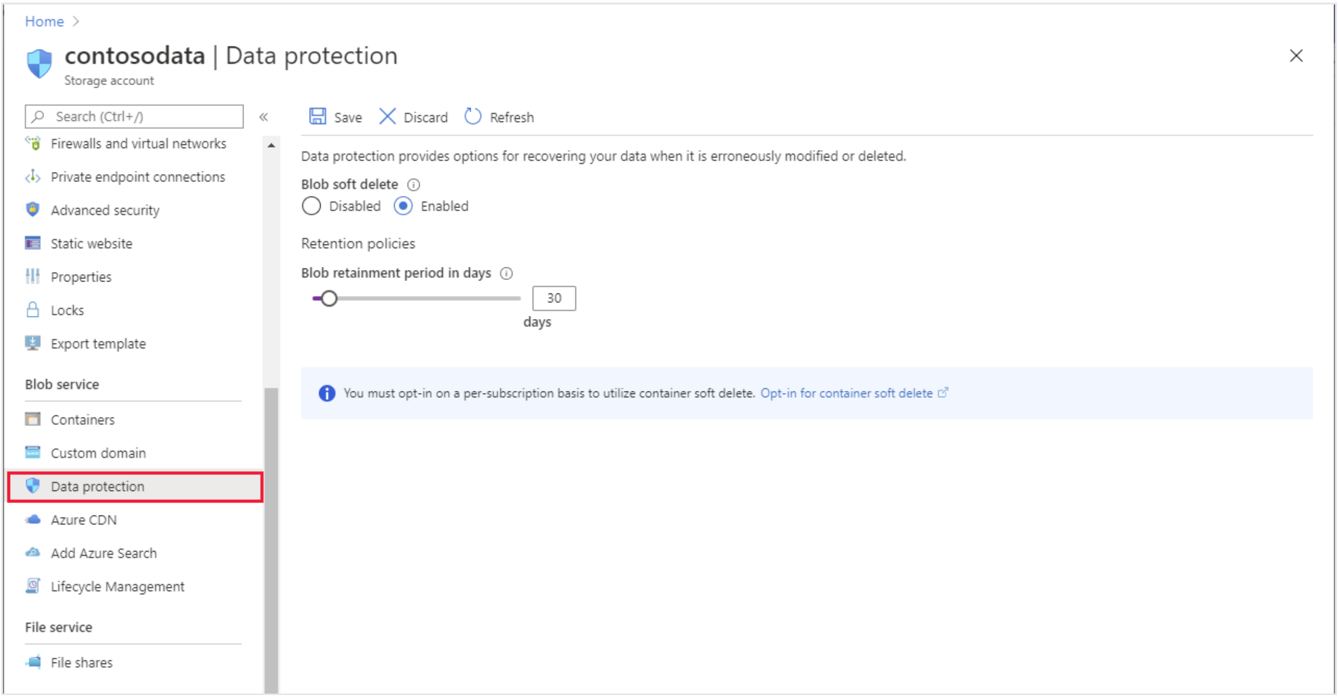
In Azure PowerShell, use the Get-AzStorageBlobContent cmdlet.

PowerShell

```powershell
Get-AzStorageAccount `
  -ResourceGroupName "contoso-group" `
  -Name "contosodata" | Get-AzStorageBlobContent `
    -Container "images" `
    -Blob "bikes\racer_green_large.gif" `
    -Destination "racer_green_large.gif"
```

Delete a blob from a container

Deleting a blob can reclaim the resources used in the storage container. However, if you've enabled the soft delete option for the storage account, the blob is hidden rather than removed, and you can restore it later. You can enable or disable soft delete in the Azure portal, and specify the time for which the blob is retained. Select the **Data protection** page under **Blob service**. If the blob isn't restored by the end of the retention period, it will be removed from storage.



Data protection provides options for recovering your data when it is erroneously modified or deleted.

Blob soft delete
○ Disabled ● Enabled

Retention policies

Blob retainment period in days: 30 days

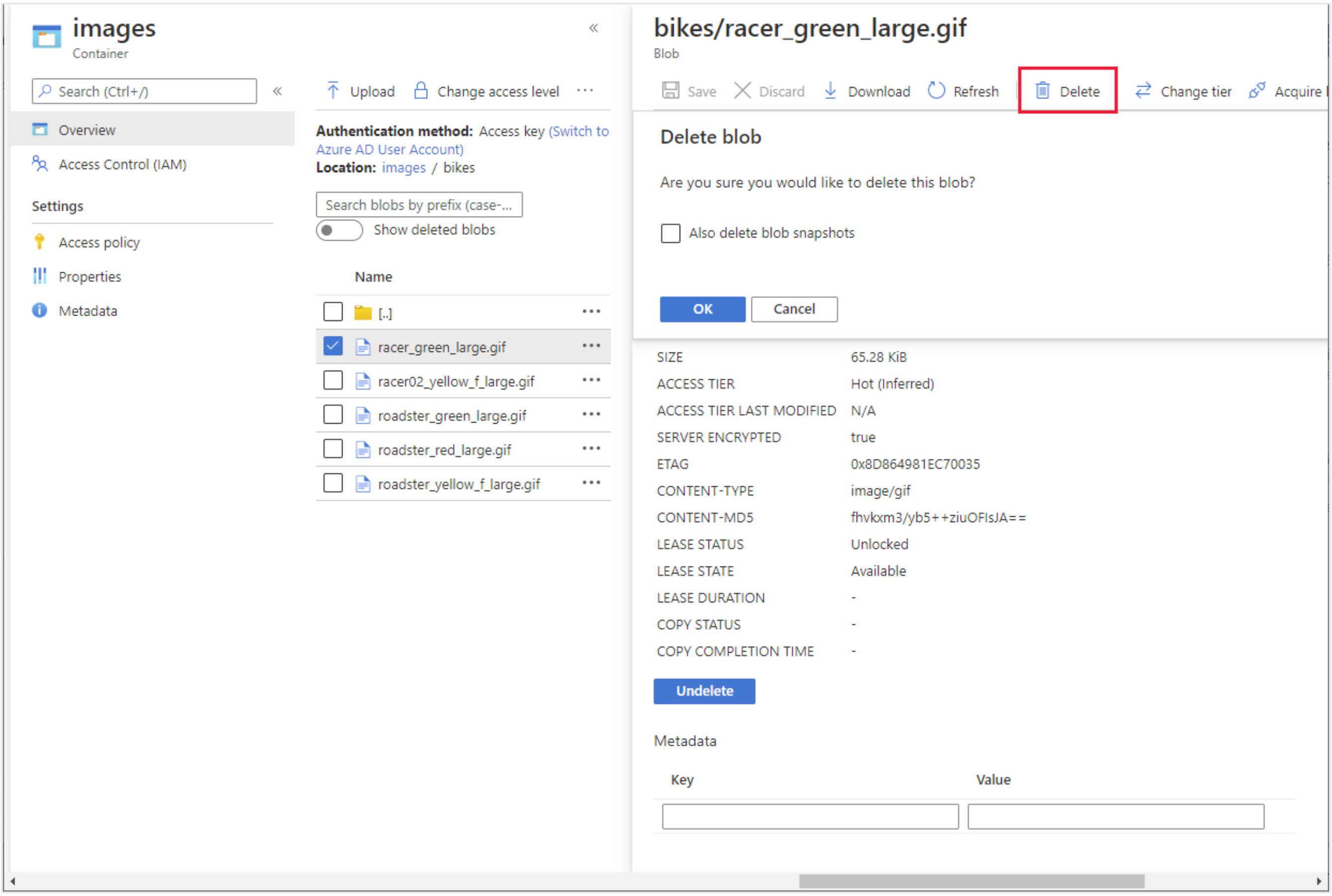
You must opt-in on a per-subscription basis to utilize container soft delete. Opt-in for container soft delete

⚠ Warning

If you created the storage account with support for hierarchical namespaces (for Data Lake Storage), the soft delete option isn't available. All blob delete operations will be final.

Use the Azure portal

If you're using the Azure portal, go to the page for your storage account and select **Containers** under **Blob service**. On the **Containers** page, select the container holding your blobs. If the container has a folder structure, move to the folder containing the blobs you want to download. Select the blob to view its details. On the details page, select **Delete**. You'll be prompted to confirm the operation.



Authentication method: Access key (Switch to Azure AD User Account)
Location: images / bikes

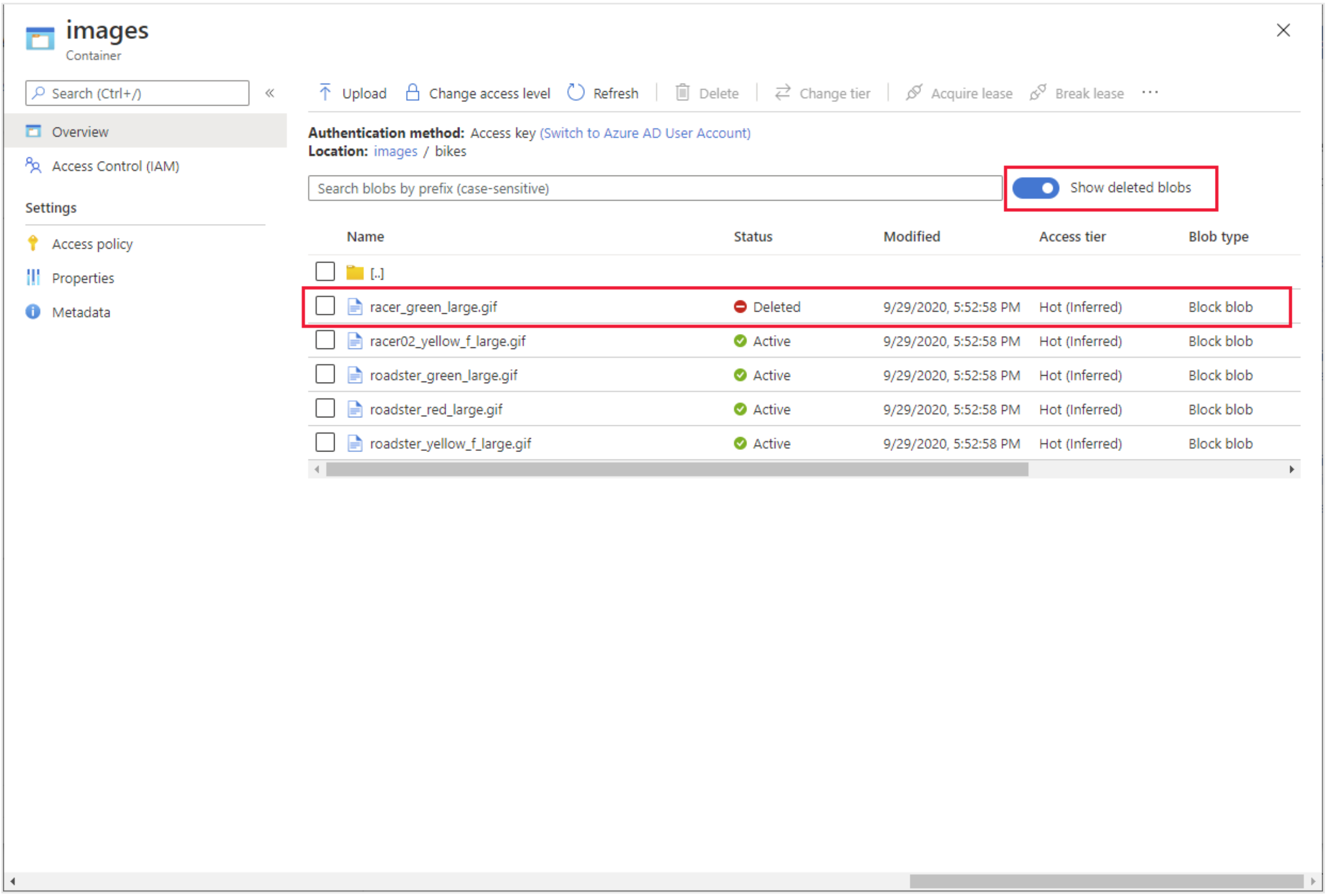
Delete blob

Are you sure you would like to delete this blob?

□ Also delete blob snapshots

SIZE	65.28 KiB
ACCESS TIER	Hot (Inferred)
ACCESS TIER LAST MODIFIED	N/A
SERVER ENCRYPTED	true
ETAG	0x8D864981EC70035
CONTENT-TYPE	image/gif
CONTENT-MD5	fhvkxm3/yb5++ziuOFIsJA==
LEASE STATUS	Unlocked
LEASE STATE	Available
LEASE DURATION	-
COPY STATUS	-
COPY COMPLETION TIME	-

If you've enabled soft delete for the storage account, the blobs page listing the blobs in a container includes the option **Show deleted blobs**. If you select this option, you can view and *undelete* a deleted blob.



Authentication method: Access key (Switch to Azure AD User Account)
Location: images / bikes

Search blobs by prefix (case-sensitive)

	Name	Status	Modified	Access tier	Blob type
□	[..]				
□	racer_green_large.gif	Deleted	9/29/2020, 5:52:58 PM	Hot (Inferred)	Block blob
□	racer02_yellow_f_large.gif	Active	9/29/2020, 5:52:58 PM	Hot (Inferred)	Block blob
□	roadster_green_large.gif	Active	9/29/2020, 5:52:58 PM	Hot (Inferred)	Block blob
□	roadster_red_large.gif	Active	9/29/2020, 5:52:58 PM	Hot (Inferred)	Block blob
□	roadster_yellow_f_large.gif	Active	9/29/2020, 5:52:58 PM	Hot (Inferred)	Block blob

Use the Azure CLI

You can delete a single blob with the az storage blob delete command, or a set of blobs with the az storage blob delete-batch command. The command below removes the *racer-green* blob from the *bikes* folder in the *images* container:

Azure CLI Copy

```
az storage blob delete ^
  --account-name contosodata ^
  --container-name "images" ^
  --name "bikes\racer_green"
```

Use Azure PowerShell

Use the Remove-AzStorageBlob cmdlet to delete a storage blob from Azure PowerShell. By default, deletion is silent. You can add the `-Confirm` flag to prompt the user to confirm that they really want to delete the blob:

PowerShell Copy

```
Get-AzStorageAccount `
  -ResourceGroupName "contoso-group" `
```

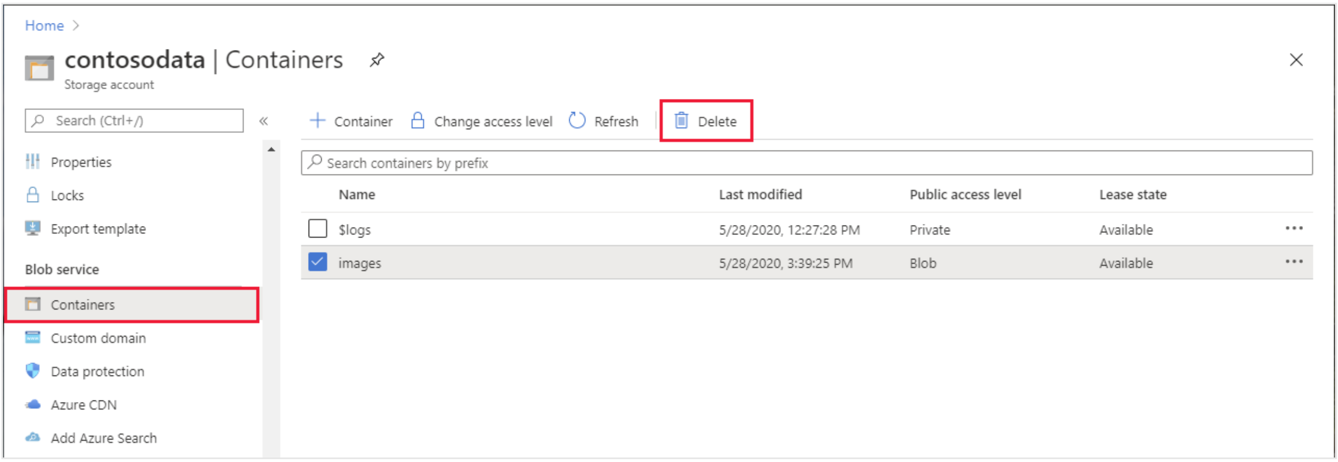
```
    -Name "contosodata" | Remove-AzStorageBlob `
      -Container "images" `
      -Blob "bikes\racer_green" `
      -Confirm
```

Delete an Azure Storage container

Removing a container automatically deletes all blobs held in that container. If you aren't careful, you can lose a great deal of data.

Use the Azure portal

In the Azure portal, select **Containers** under **Blob service**, select the container to delete, and then select **Delete** in the toolbar.



	Name	Last modified	Public access level	Lease state	
☐	$logs	5/28/2020, 12:27:28 PM	Private	Available	···
☑	images	5/28/2020, 3:39:25 PM	Blob	Available	···

Use the Azure CLI

In the Azure CLI, use the az storage container delete command. The following example deletes the *images* container referenced in previous examples.

azure Copy

```
az storage container delete \
  --account-name contosodata \
  --name "images"
```

Use Azure PowerShell

The Remove-AzStorageContainer cmdlet deletes a storage container. The `-Confirm` flag prompts the user to confirm the delete operation. The code below shows an example:

PowerShell Copy

```
Get-AzStorageAccount `
  -ResourceGroupName "contoso-group" `
  -Name "contosodata" | Remove-AzStorageContainer `
    -Name "images" `
    -Confirm
```

Next unit: Manage Azure File storage

Continue >