

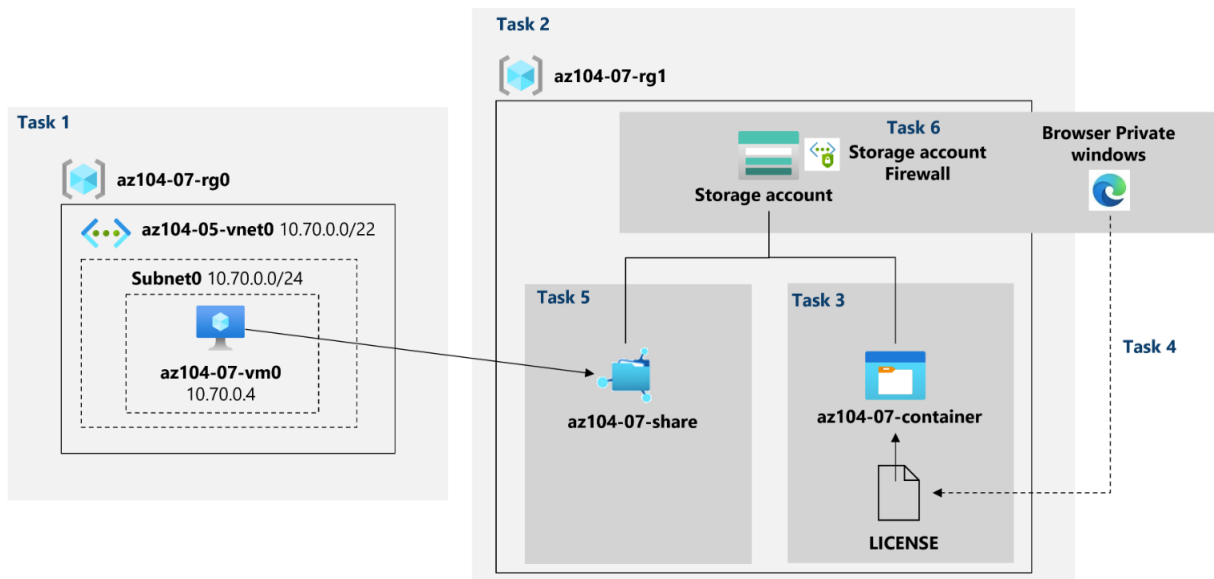
A6- Manage Azure Storage Account Project

I need to evaluate the use of Azure storage for storing files residing currently in on-premises data stores. While majority of these files are not accessed frequently, there are some exceptions. I would like to minimize cost of storage by placing less frequently accessed files in lower-priced storage tiers. I also plan to explore different protection mechanisms that Azure Storage offers, including network access, authentication, authorization, and replication. Finally, I want to determine to what extent Azure Files service might be suitable for hosting my on-premises file shares.

In this project, my tasks:

- Task 1: Provision the lab environment
- Task 2: Create and configure Azure Storage accounts
- Task 3: Manage blob storage
- Task 4: Manage authentication and authorization for Azure Storage
- Task 5: Create and configure an Azure Files shares
- Task 6: Manage network access for Azure Storage

Architecture diagram of the project:



Task 1: Provision the lab environment

In this task, I will deploy an Azure virtual machine that I will use later in this project.

Microsoft Azure

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

Home >

Resource groups

Trent University (trentu.onmicrosoft.com)

+ Create Manage view Refresh Export to CSV Open query Assign tags

Filter for any field...

Subscription equals all Location equals all Add filter

0 Unsecured resources 0 Recommendations

No grouping List view

Name ↑	Subscription ↑	Location ↑
a6-rg0	Azure for Students	East US
a6-rg1	Azure for Students	East US
NetworkWatcherRG	Azure for Students	East US

< Previous Page 1 of 1 Next > Showing 1 to 3 of 3 records Give feedback

PowerShell

PS /home/savas> New-AzResourceGroupDeployment -ResourceGroupName \$rgname -TemplateFile \$HOME/A6-vm-template.json -TemplateParameterFile \$HOME/A6-vm-parameters.json -AsJob

Id	Name	PSJobTypeName	State	HasMoreData	Location	Command
2	Long Running O...	AzureLongRunni...	Running	True	localhost	New-AzResourceGroupDeplo...

PS /home/savas>

Microsoft Azure

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

Home > Resource groups > a6-rg0

Resource groups

Trent University (trentu.onmicrosoft.com)

+ Create Manage view

Filter for any field...

Name ↑

a6-rg0

a6-rg1

NetworkWatcherRG

Overview

Activity log

Access control (IAM)

Tags

Resource visualizer

Events

Settings

Deployments

Security

Policies

Properties

Locks

Cost Management

Cost analysis

Cost alerts (preview)

Budgets

Advisor recommendations

Monitoring

Insights (preview)

Alerts

Metrics

Diagnostic settings

Logs

Advisor recommendations

a6-rg0 | Resource visualizer

Search

Choose resources Reset diagram Zoom to fit Refresh Export PNG Feedback

AS-vm0 Virtual machine

AS-vm0 Storage account

AS-vm0 Blob1 Backup1000... Disk

AS-vm0 Network interface

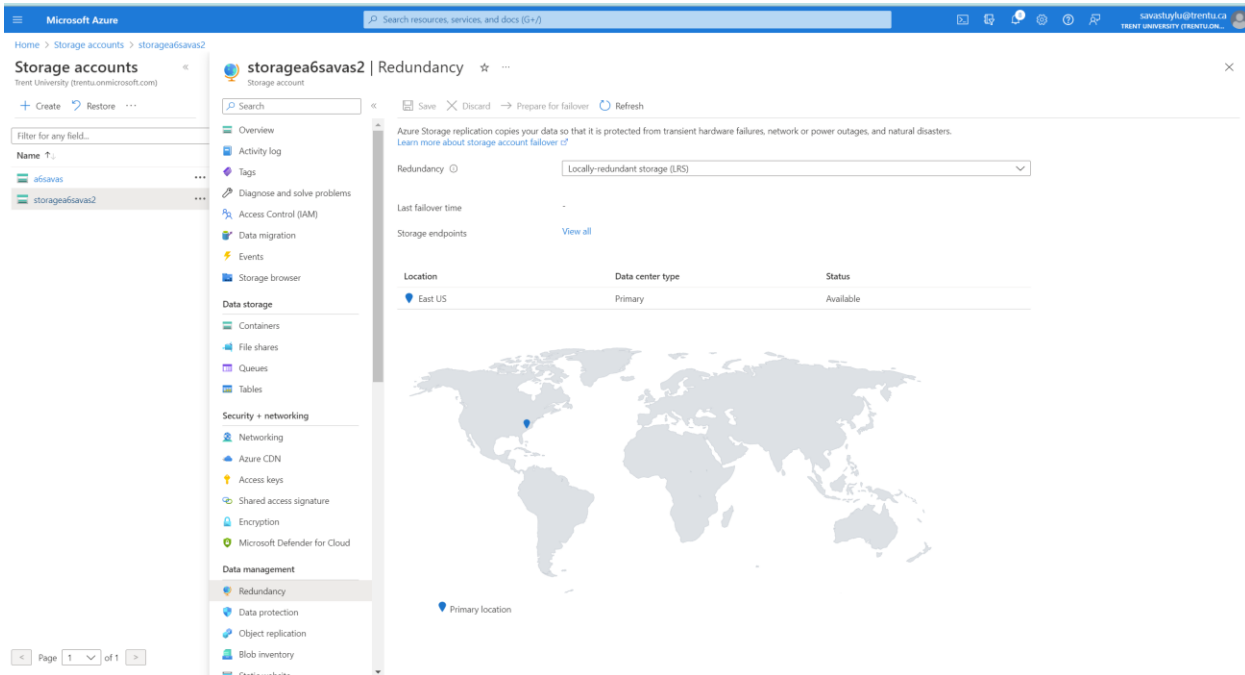
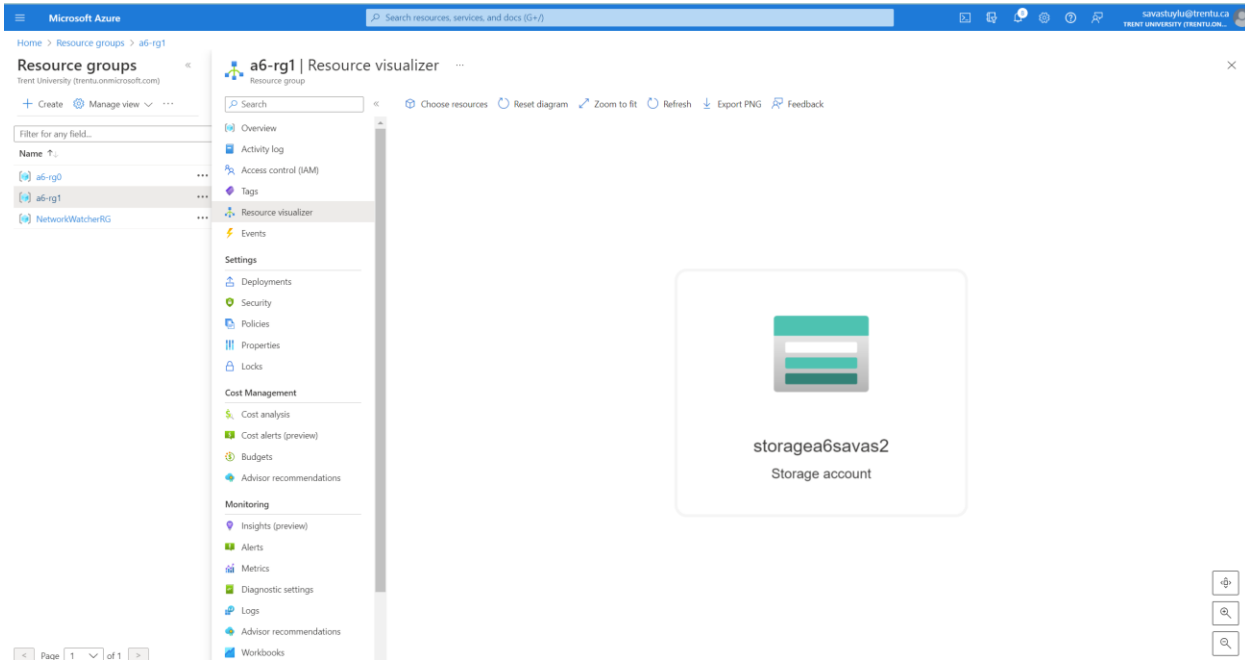
AS-rg0 Public IP address

AS-vm0 Virtual network

AS-rg0 Network security group

Task 2: Create and configure Azure Storage accounts

In this task, I will create and configure an Azure Storage account.



Task 3: Manage blob storage

In this task, I will create a blob container and upload a blob into it.

The screenshot displays the Microsoft Azure portal interface. The top navigation bar shows the user is logged in as 'sawashyfu@trentu.ca'. The breadcrumb trail indicates the current location: Home > Storage accounts > storage6a6vasaz2 > Containers > a6-container > licenses/LICENSE.

On the left sidebar, the 'a6-container' is selected. The 'Overview' tab is active, showing the container's authentication method as 'Access key' and its location as 'a6-container / licenses'. A search bar for blobs is present, with 'Show deleted blobs' unchecked. The 'Settings' section includes options for 'Shared access tokens', 'Access policy', 'Properties', and 'Metadata'.

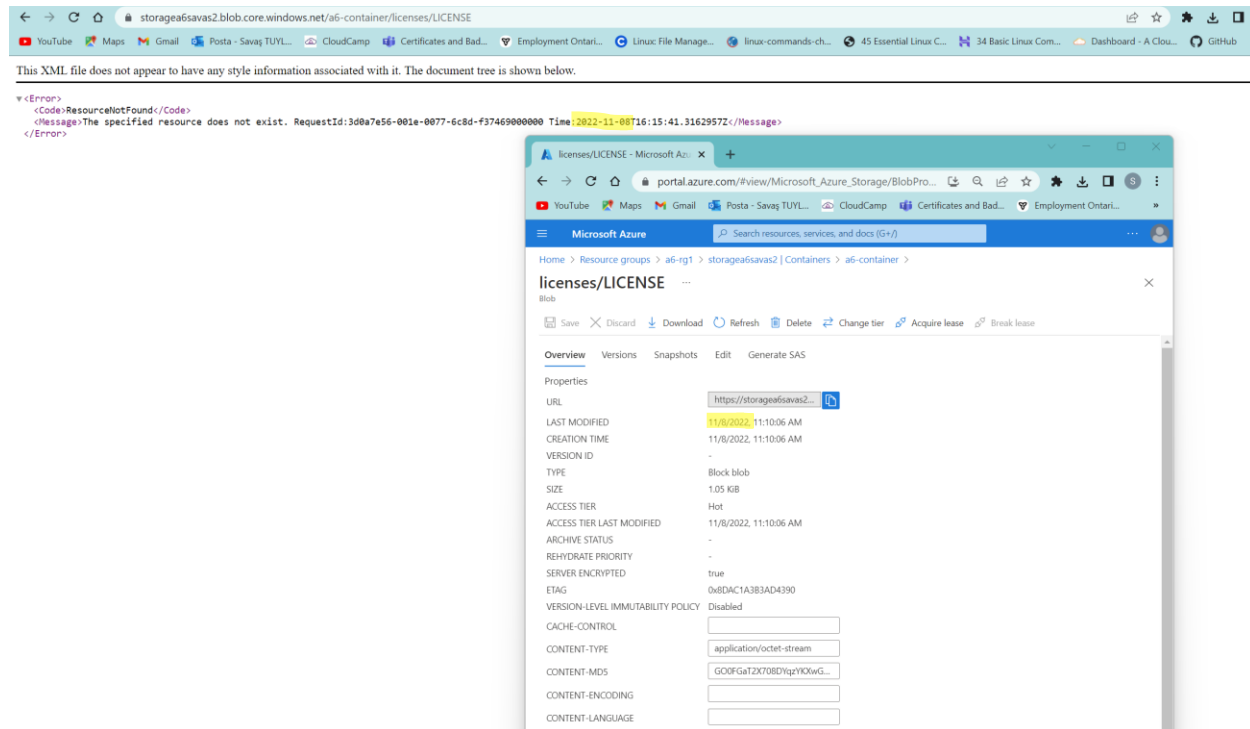
The main content area displays the 'licenses/LICENSE' blob. The 'Overview' tab is selected, showing the blob's properties. The URL is 'https://storage6a6vasaz2...'. The blob is a 'Block blob' with a size of '1.05 KiB' and an 'Access tier' of 'Hot'. The 'Access tier last modified' date is '11/8/2022, 11:10:06 AM'. The 'ETAG' is '0x0AC1A3B3AD4390'. The 'Version-level immutability policy' is 'Disabled'. The 'Cache-control' is 'application/octet-stream'. The 'Content-md5' is 'G00FGa7ZK708D1q2Y10wG...'. The 'Content-encoding' is empty. The 'Content-language' is empty. The 'Content-disposition' is empty. The 'Lease status' is 'Unlocked'. The 'Lease state' is 'Available'. The 'Lease duration' is empty. The 'Copy status' is empty. The 'Copy completion time' is empty.

Below the properties, there is a table for 'Metadata' with columns 'Key' and 'Value'.

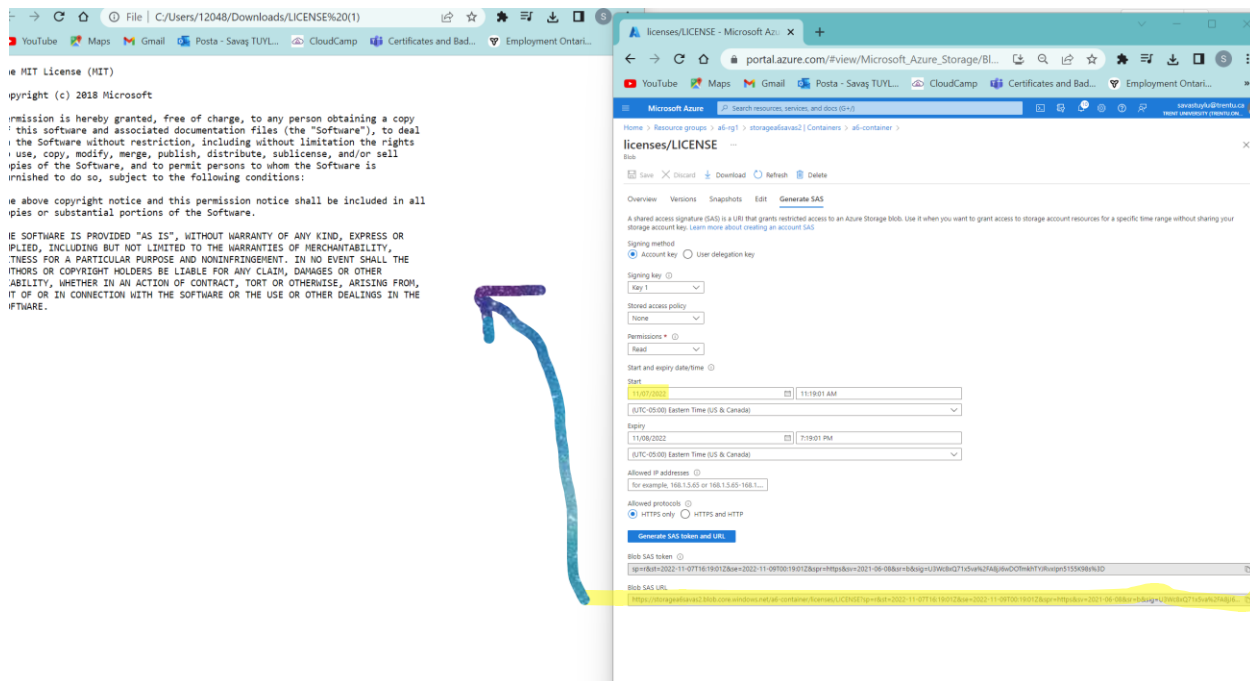
Task 4: Manage authentication and authorization for Azure Storage

In this task, I will configure authentication and authorization for Azure Storage.

Before authentication to the license



After authentication to the license



Before authorization to the blob storage

Microsoft Azure

Search resources, services, and docs (G+)

Home > Resource groups > a6-rg1 > storagea6sasvaz2 | Containers >

a6-container

Container

Search

Upload Change access level Refresh Delete Change tier Acquire lease Break lease View snapshots Create snapshot

Overview

Diagnose and solve problems

Access Control (IAM)

Settings

Shared access tokens

Access policy

Properties

Metadata

You do not have permissions to list the data using your user account with Azure AD. Click to learn more about authenticating with Azure AD.

This request is not authorized to perform this operation using this permission.

RequestId:ad7e7b3d-201e-0041-538e-f93ba9000000

Time:2022-11-08T16:46:53.907906Z

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

Location: a6-container

Search blobs by prefix (case-sensitive)

Show deleted blobs

Add filter

Name	Modified	Access tier	Archive status	Blob type	Size	Lease state
No blobs found.						

After authorization to the blob storage

Microsoft Azure

Search resources, services, and docs (G+)

Home > Resource groups > a6-rg1 > storagea6sasvaz2 | Containers >

a6-container

Container

Search

Upload Change access level Refresh Delete Change tier Acquire lease Break lease View snapshots Create snapshot

Overview

Diagnose and solve problems

Access Control (IAM)

Settings

Shared access tokens

Access policy

Properties

Metadata

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

Location: a6-container

Search blobs by prefix (case-sensitive)

Show deleted blobs

Add filter

Name	Modified	Access tier	Archive status	Blob type	Size	Lease state
licenses						...

Task 5: Create and configure an Azure Files shares

In this task, I will create and configure Azure Files shares.

Microsoft Azure

Search resources, services, and docs (5+)

Home > Storage accounts > storagea6savas2 | File shares >

a6-fileshare

File share

Search

UploadAdd directoryRefreshDelete directoryProperties

Overview

Diagnose and solve problems

Access Control (IAM)

Settings

Properties

Operations

Snapshots

Backup

Search files by prefix

Name	Type	Size	
[...]			...
a6-file.txt	File	0 B	...

What is 445 port used for?

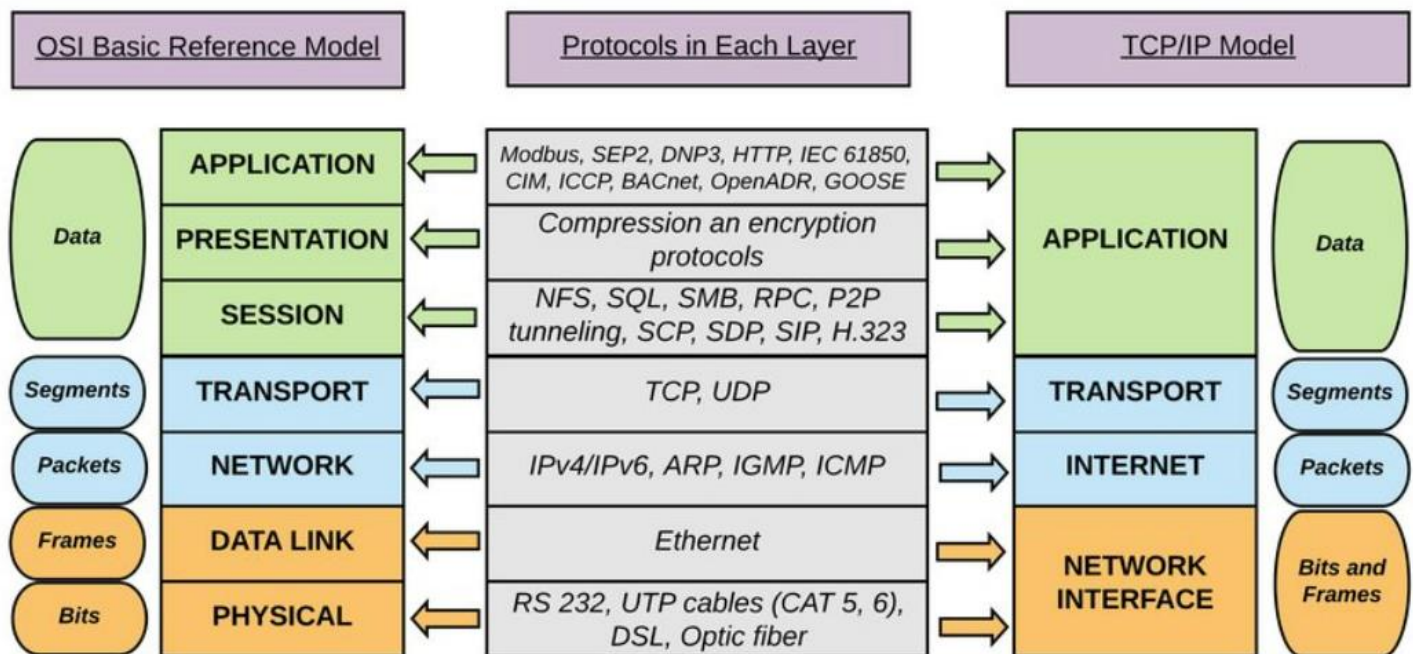
Port 445 is a traditional Microsoft networking port with tie-ins to the original NetBIOS service found in earlier versions of Windows OSes. Today, port 445 is used by **Microsoft Directory Services for Active Directory (AD)** and for the **Server Message Block (SMB) protocol over TCP/IP**

What are ports 139 and 445 used for?

Port 139: SMB originally ran on top of NetBIOS using port 139. NetBIOS is an older transport layer that allows Windows computers to talk to each other on the same network. Port 445: Later versions of SMB (after Windows 2000) began to use port 445 on top of a TCP stack. Using TCP allows SMB to work over the internet.

What is SMB in firewall?

Summary. Server Message Block (SMB) is **a network file sharing and data fabric protocol**. SMB is used by billions of devices in a diverse set of operating systems, including Windows, MacOS, iOS, Linux, and Android. Clients use SMB to access data on servers



The logical mapping between OSI basic reference model and the TCP/IP stack.

Task 6: Manage network access for Azure Storage

In this task, I will configure network access for Azure Storage.

The screenshot displays the Microsoft Azure portal interface. The top navigation bar shows the user is logged in as savastylus@trentu.ca. The main content area is titled 'storageea6savas2 | Networking'. The left sidebar shows the 'Storage accounts' section with a list of accounts, including 'storageea6savas2'. The main panel shows the 'Networking' page for the selected storage account. Under 'Public network access', the option 'Enabled from selected virtual networks and IP addresses' is selected. Under 'Virtual networks', there are buttons to 'Add existing virtual network' and 'Add new virtual network'. Below this is a table with columns: Virtual Network, Subnet, Address range, Endpoint Status, Resource Group, and Subscription. The table is currently empty, showing 'No network selected.'.

Below the Azure portal, a PowerShell terminal window is open. It shows the following output:

```
Requesting a Cloud Shell.Succeeded.
Connecting terminal...

Welcome to Azure Cloud Shell

Type "az" to use Azure CLI
Type "help" to learn about Cloud Shell

MOTD: Switch to PowerShell from Bash: pwsh

VERBOSE: Authenticating to Azure ...
VERBOSE: Building your Azure drive ...
PS /home/savas> Invoke-WebRequest -Uri 'https://storageea6savas2.blob.core.windows.net/a6-container/licenses/LICENSE?sp=r&st=2022-11-08T16:56:04Z&se=2022-11-09T00:56:04Z&spr=https&sv=2021-06-08&sr=b&sig=5X8ajzKns4F1D0g81ZtCQ401KEB
21dms01V7yFus3D'
Invoke-WebRequest: AuthorizationFailureThis request is not authorized to perform this operation.
RequestId:67a36777-791e-406d-8083-f315b6000000
Time:2022-11-08T16:57:09.3364417Z
PS /home/savas>
```