

REPORT ON
MICROSOFT AZURE FUNDAMENTALS

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1) Sandbox:

Create a Linux virtual machine and install Nginx

This screenshot shows a Microsoft Learn exercise titled "Create a Linux virtual machine and install Nginx". The exercise interface includes a navigation bar with tabs like "Training", "Products", "FAQ & Help", and a progress bar indicating "LEVEL 5" and "2025 / 7699 XP". The main content area contains a code editor for the Azure CLI command:

```
az vm extension set \
--resource-group "learn-f4e8b257-388a-486c-996f-1780972117c5" \
--vm-name my-vm \
--name customScript \
--publisher Microsoft.Azure.Extensions \
--version 2.1 \
--settings '{"fileUris": ["https://raw.githubusercontent.com/Microsoft/Azure-Compute-Extensions/master/configure-nginx.sh"]}' \
--protected-settings '{"commandToExecute": "./configure-nginx.sh"}
```

Below the command, a note explains its purpose:

This command uses the Custom Script Extension to run a Bash script on your VM. The script is stored on GitHub. While the command runs, you can choose to [examine the Bash script](#) from a separate browser tab. To summarize, the script:

- a. Runs `apt-get update` to download the latest package information from the internet. This step helps ensure that the next command can locate the latest version of the Nginx package.
- b. Installs Nginx.
- c. Sets the home page, `/var/www/html/index.html`, to print a welcome message that includes your VM's host name.

A "Continue" button is present at the bottom left. On the right, there is an "Azure Cloud Shell" window showing the execution of the command:

```
yogesh [ ~ ]$ az vm extension set \
--resource-group "learn-f4e8b257-388a-486c-996f-1780972117c5" \
--vm-name my-vm \
--name customScript \
--publisher Microsoft.Azure.Extensions \
--version 2.1 \
--settings '{"fileUris": ["https://raw.githubusercontent.com/MicrosoftDocs/mslearn-welcome-to-azure/master/configure-nginx.sh"]}' \
--protected-settings '{"commandToExecute": "./configure-nginx.sh"}
```

The shell output shows the command being run and the JSON response of the extension settings.

Access your web server

This screenshot shows a Microsoft Learn exercise titled "Exercise - Configure network access". The exercise interface includes a navigation bar with tabs like "Training", "Products", "FAQ & Help", and a progress bar indicating "LEVEL 5" and "2025 / 7699 XP". The main content area shows a "Sandbox activated! Time remaining: 24 min" message. A note states: "You have used 1 of 10 sandboxes for today. More sandboxes will be available tomorrow." Below this, a note says: "In this exercise, you configure the access to the virtual machine (VM) you created earlier in this module." An "Important" note at the bottom states: "The Microsoft Learn sandbox should still be running. If the sandbox timed out, you'll need to redo the previous exercise (Exercise - Create an Azure virtual machine)."

The right side of the screen shows the "Azure Cloud Shell" window with the following command and its output:

```
yogesh [ ~ ]$ IPADDRESS=$(az vm list-ip-addresses --resource-group "learn-f4e8b257-388a-486c-996f-1780972117c5" --name my-vm --query "[].virtualMachine.network.publicIpAddresses[*].ipAddress" --output tsv)
curl: (28) Failed to connect to 52.160.111.1 port 80 after 5003 ms: Timeout was reached
yogesh [ ~ ]$ echo $IPADDRESS
52.160.111.1
yogesh [ ~ ]$ az network nsg list --resource-group "learn-f4e8b257-388a-486c-996f-1780972117c5" --query '[].name' --output tsv
my-vmNSG
yogesh [ ~ ]$ az network nsg rule list --resource-group "learn-f4e8b257-388a-486c-996f-1780972117c5" --nsg-name my-vmNSG
[
  {
    "access": "Allow",
    "destinationAddressPrefix": "*",
    "destinationAddressPrefixes": [],
    "destinationPortRange": "22",
    "destinationPortRanges": [],
    "direction": "Inbound",
    "etag": "W/\\"501ad0cf-9530-4b9a-9b76-a18cf05dd91\\\"",
    "id": "/subscriptions/651da11b-7757-4742-ac91-148e47c2869b/resourceGroups/learn-f4e8b257-388a-486c-996f-1780972117c5/providers/Microsoft.Network/networkSecurityGroups/my-vmNSG/securityRules/default-allow-ssh",
    "name": "default-allow-ssh",
    "priority": 1000,
```

List the current network security group rules

```
"destinationAddressPrefixes": [],
"destinationPortRange": "22",
"destinationPortRanges": [],
"direction": "Inbound",
"etag": "W/\"501ad0cf-9530-4b9a-9b76-a18cfc05dd91\"",
"id": "/subscriptions/651da1b-7757-4742-ac91-148e47c2869b/resourceGroups/learn-f4e8b257-388a-486c-996f-1780972117c5/providers/Microsoft.Network/networkSecurityGroups/my-vmNSG/securityRules/default-allow-ssh",
"name": "default-allow-ssh",
"priority": 1000,
"protocol": "Tcp",
"provisioningState": "Succeeded",
"resourceGroup": "learn-f4e8b257-388a-486c-996f-1780972117c5",
"sourceAddressPrefix": "*",
"sourceAddressPrefixes": [],
"sourcePortRange": "*",
"sourcePortRanges": [],
"type": "Microsoft.Network/networkSecurityGroups/securityRules"
}
yogesh [ ~ ]$ az network nsg rule list --resource-group "learn-f4e8b257-388a-486c-996f-1780972117c5" --nsg-name my-vmNSG --query '[].{Name:name, Priority:priority, Port:destinationPortRange, Access:access}' --output table
Name          Priority      Port      Access
-----        -----        -----    -----
default-allow-ssh  1000        22       Allow
yogesh [ ~ ]$
```

Create the network security rule

```
"destinationAddressPrefixes": [],
"destinationPortRange": "80",
"destinationPortRanges": [],
"direction": "Inbound",
"etag": "W/\"6adf2692-41da-411b-b497-2bdc7e0978b3\"",
"id": "/subscriptions/651da1b-7757-4742-ac91-148e47c2869b/resourceGroups/learn-f4e8b257-388a-486c-996f-1780972117c5/providers/Microsoft.Network/networkSecurityGroups/my-vmNSG/securityRules/allow-http",
"name": "allow-http",
"priority": 100,
"protocol": "Tcp",
"provisioningState": "Succeeded",
"resourceGroup": "learn-f4e8b257-388a-486c-996f-1780972117c5",
"sourceAddressPrefix": "*",
"sourceAddressPrefixes": [],
"sourcePortRange": "*",
"sourcePortRanges": [],
"type": "Microsoft.Network/networkSecurityGroups/securityRules"
}
yogesh [ ~ ]$ az network nsg rule list --resource-group "learn-f4e8b257-388a-486c-996f-1780972117c5" --nsg-name my-vmNSG --query '[].{Name:name, Priority:priority, Port:destinationPortRange, Access:access}' --output table
Name          Priority      Port      Access
-----        -----        -----    -----
default-allow-ssh  1000        22       Allow
allow-http      100         80       Allow
yogesh [ ~ ]$
```

Access your web server again

Now that you configured network access to port 80, let's try to access the web server a second time.

Note

After you update the NSG, it may take a few moments before the updated rules propagate. Retry the next step, with pauses between attempts, until you get the desired results.

1. Run the same `curl` command that you ran earlier:

```
Bash
curl --connect-timeout 5 http://$IPADDRESS
```

You see this response:

```
HTML
<html><body><h2>Welcome to Azure! My name is my-vm.</h2></body></ht
```

```
| Azure Cloud Shell
Switch to PowerShell Restart Manage files New session Editor ...
"destinationPortRanges": [],
"direction": "Inbound",
"etag": "W/\\"6adf2692-41da-411b-b497-2bdc7e0978b3\\\"",
"id": "/subscriptions/651da11b-7757-4742-ac91-148e47c2869b/resourceGroups/learn-f4e8b257-388a-486c-996f-1780972117c5/providers/Microsoft.Network/networkSecurityGroups/my-vmNSG/securityRules/allow-http",
"name": "allow-http",
"priority": 100,
"protocol": "Tcp",
"provisioningState": "Succeeded",
"resourceGroup": "learn-f4e8b257-388a-486c-996f-1780972117c5",
"sourceAddressPrefix": "*",
"sourceAddressPrefixes": [],
"sourcePortRange": "*",
"sourcePortRanges": [],
"type": "Microsoft.Network/networkSecurityGroups/securityRules"
}
yogesh [ ~ ]$ az network nsg rule list --resource-group "learn-f4e8b257-388a-486c-996f-1780972117c5" --nsg-name my-vmNSG --query '[].{Name:name, Priority:priority, Port:destinationPortRange, Access:access}' --output table
Name          Priority    Port     Access
-----
default-allow-ssh 1000      22      Allow
allow-http       100        80      Allow
yogesh [ ~ ]$ curl --connect-timeout 5 http://$IPADDRESS
<html><body><h2>Welcome to Azure! My name is my-vm.</h2></body></html>
yogesh [ ~ ]$
```

Final output:

Not Secure 52.160.111.1

Welcome to Azure! My name is my-vm.

2) Azure Academic Services: Azure for Students

Microsoft Academic Verification Process

The screenshot shows the Microsoft Academic Verification process. At the top, there's a navigation bar with links for Home, FAQ, and Support. Below it, a section titled "Take advantage of your academic status" explains that 'school' includes schools, universities, colleges, technical/STEM schools, and other academic schools. A progress bar at the bottom indicates four steps: Profile information (checkmark), Security Check (checkmark), Additional information (circle), and Verifying (checkmark). A large green "Congratulations!" message is displayed, stating "Your academic status has been successfully verified." A blue "Continue" button is visible.

For academic status verification 'school' is defined to include 'schools, universities, colleges, technical/STEM schools, and other academic schools' throughout the verification process.

Profile information Security Check Additional information Verifying

Congratulations!

Your academic status has been successfully verified.

Continue

[Consumer Health Privacy](#) [Privacy](#) [Terms of use](#) [Trademark](#)

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Creation of resource groups

The screenshot shows the Microsoft Azure portal interface. The user is navigating to the "Resource groups" page. The search bar contains "Search resources, services, and docs (G+)". The main table lists three resource groups:

Name	Subscription	Location
NetworkWatcherRG	Azure for Students	Central India
RG	Azure for Students	Central India
sec	Azure for Students	Central India

At the bottom, there are navigation links for "Page 1 of 1" and "Next >". A "Give feedback" link is also present.

Creation of Virtual Machine

The screenshot shows the Microsoft Azure portal interface. The user is navigating to the 'Virtual machines' section. A search bar at the top right contains the query 'Search resources, services, and docs (G+)'. Below the search bar, there are several filter options: 'Subscription equals all', 'Type equals all', 'Resource group equals all', 'Location equals all', and 'Add filter'. The main table displays one record: a Linux-based virtual machine named 'yogesh-125' located in 'Central India' under the 'Azure for Students' resource group. The table includes columns for Name, Subscription, Resource group, Location, Status, Operating system, Size, Public IP address, and Disks. At the bottom of the table, there are navigation buttons for 'Page 1 of 1' and a 'Give feedback' link.

Hosting my portfolio using Azure Cloud Services

The screenshot shows a portfolio website titled 'PORTFOLIO' on the left side. The main content area features a large profile picture of a man with the name 'YOGESH' displayed prominently. Below the name is a short bio: 'I'M A DEDICATED SOFTWARE ENGINEER WITH EXPERTISE IN FULL-STACK DEVELOPMENT AND A PASSION FOR SOLVING COMPLEX PROBLEMS. COMMITTED TO DELIVERING HIGH-QUALITY CODE AND STAYING CURRENT WITH INDUSTRY TRENDS.' At the bottom of the page, there is a 'Portfolio' button. On the left sidebar, there are three menu items: 'Home', 'About', and 'Contact'.

Pricing calculator

The screenshot shows a Microsoft Excel spreadsheet titled "Microsoft Azure Estimate". The top menu bar includes "Home", "Insert", "Draw", "Page Layout", "Formulas", "Data", "Review", "View", and "Automate". The ribbon tabs show "General" under "Format" and "Conditional Formatting". The status bar at the bottom indicates "Ready" and "Accessibility: Investigate".

Microsoft Azure Estimate

Service category	Service type	Custom name	Region	Description	Estimated monthly cost	Estimated upfront cost
Compute	Virtual Machines		East US	1 D2 v3 (2 vCPUs, 8 GB RAM) x 730 Hours (Pay as you go), Windows (License included), OS Only; 0 managed disks - \$4; Inter Region transfer type, 5 GB outbound data transfer from East US to East Asia	\$137.24	\$0.00
Support			Support		\$0.00	\$0.00
			Licensing Program	Microsoft Customer Agreement (MCA)		
			Billing Account			
			Billing Profile			
			Total		\$137.24	\$0.00

Disclaimer
All prices shown are in United States – Dollar (\$) USD. This is a summary estimate, not a quote. For up to date pricing information please visit <https://azure.microsoft.com/pricing/calculator/>
This estimate was created at 8/9/2024 4:04:33 AM UTC.

Total Cost of Ownership (TCO) Calculator

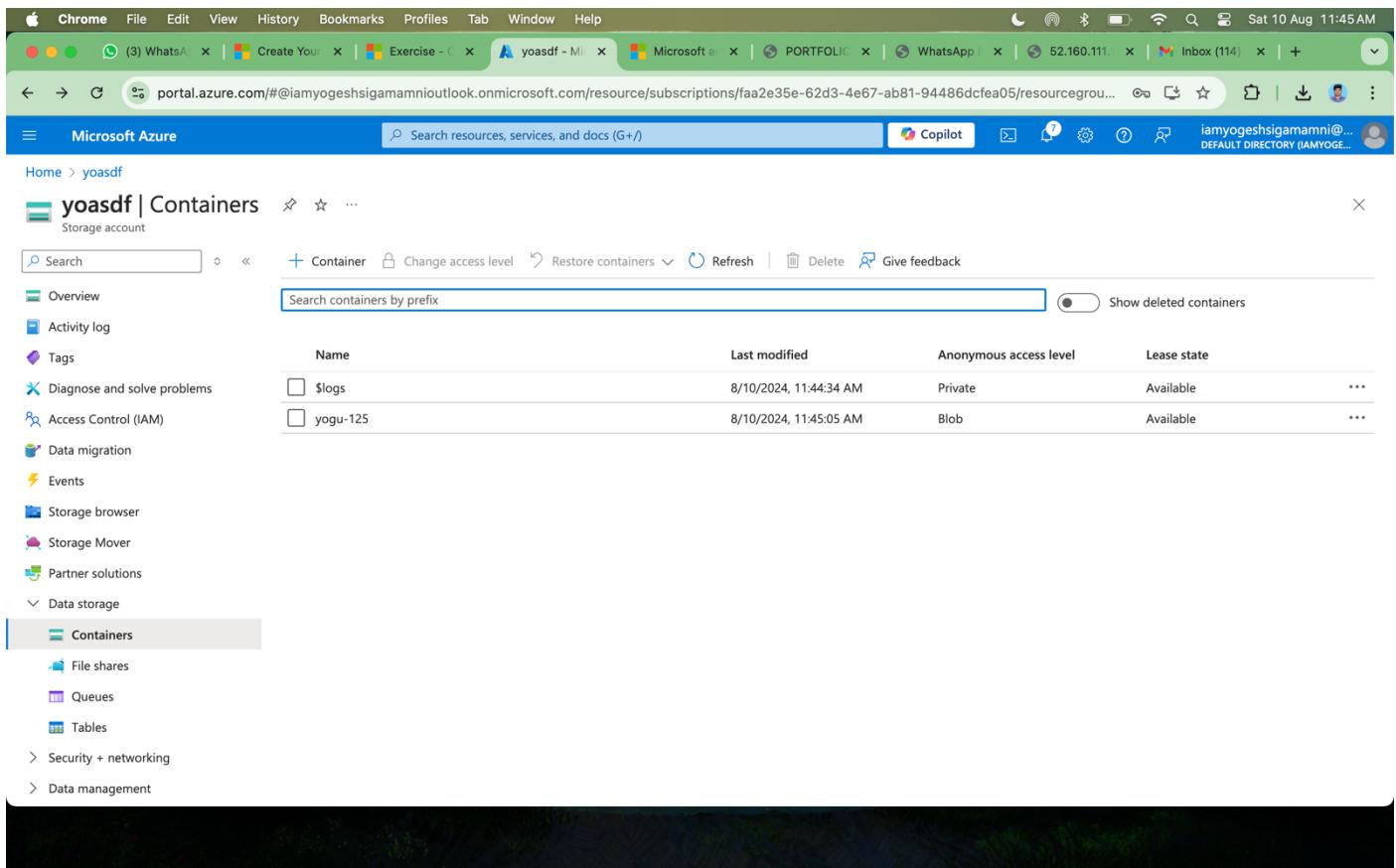
The screenshot shows a PDF document titled "tco azure.pdf" with "Page 1 of 12". The document is a "Total Cost of Ownership (TCO) Calculator" from Microsoft Azure. It features a graph showing projected cost savings over 5 years, a pie chart comparing on-premises vs. Azure costs, and a section on total cost over time.

Total Cost of Ownership (TCO) Calculator
Estimate the cost savings you can realize by migrating your workloads to Azure

Over 5 year(s) with Microsoft Azure, your estimated cost savings could be as much as **\$158,081**

Total on-premises vs. Azure cost over time
Savings from running workloads in Azure accrue over time. The following shows how those savings add up over years.

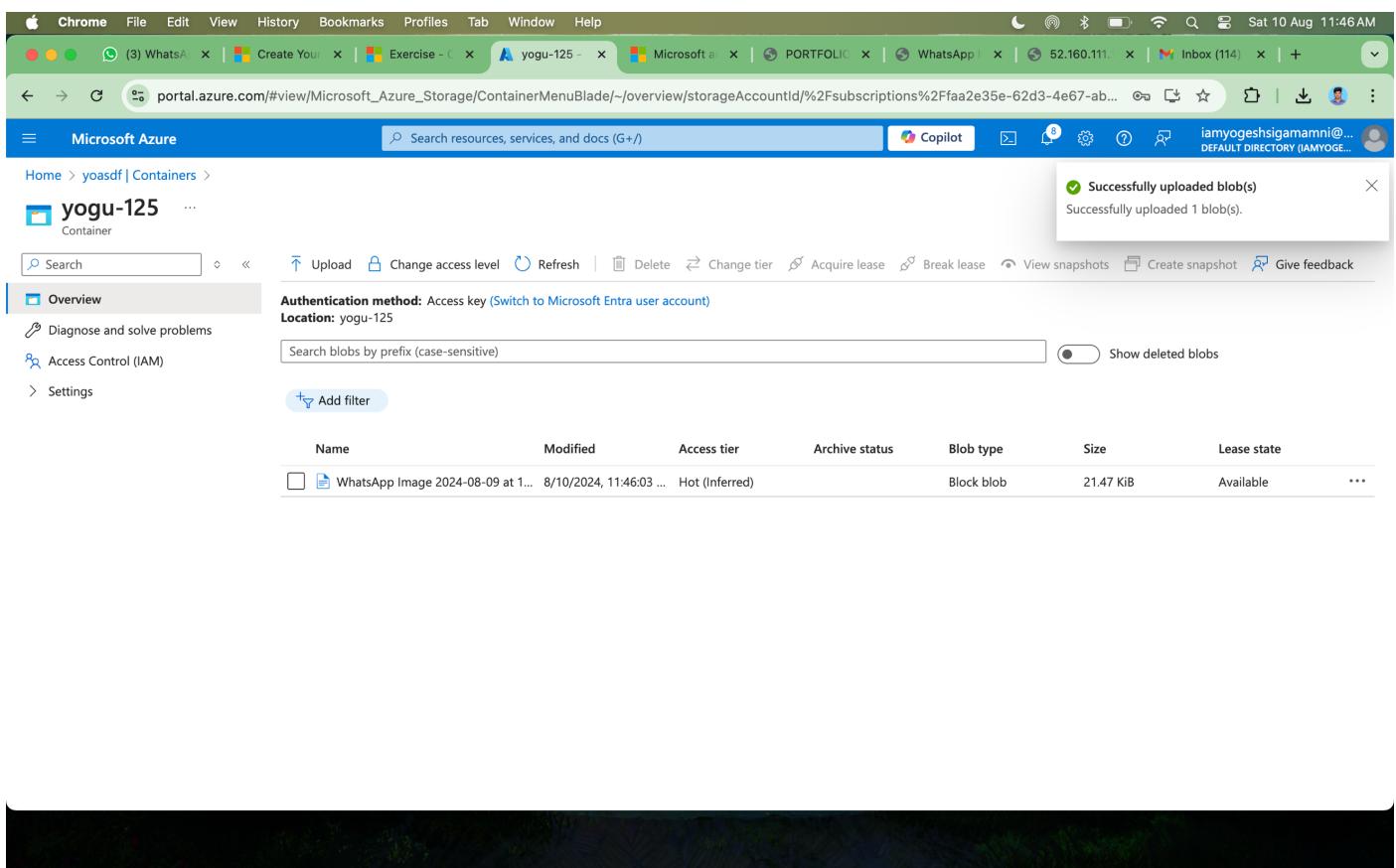
Creation of container



The screenshot shows the Microsoft Azure portal interface for a storage account named 'yoasdf'. The left sidebar is collapsed, showing a list of services: Tags, Diagnose and solve problems, Access Control (IAM), Data migration, Events, Storage browser, Storage Mover, Partner solutions, and Data storage. Under Data storage, 'Containers' is selected, highlighted with a grey background. The main content area displays a table of existing containers:

Name	Last modified	Anonymous access level	Lease state
\$logs	8/10/2024, 11:44:34 AM	Private	Available
yogu-125	8/10/2024, 11:45:05 AM	Blob	Available

At the top of the main content area, there are buttons for '+ Container', 'Change access level', 'Restore containers', 'Refresh', 'Delete', and 'Give feedback'. A search bar at the top says 'Search resources, services, and docs (G+)'. A message bar at the bottom right says 'Show deleted containers'.



The screenshot shows the Microsoft Azure portal interface for a specific container named 'yogu-125' within the 'yoasdf' storage account. The left sidebar is expanded, showing 'Overview', 'Diagnose and solve problems', 'Access Control (IAM)', and 'Settings'. The 'Overview' tab is selected, highlighted with a grey background. The main content area displays the following information:

Authentication method: Access key ([Switch to Microsoft Entra user account](#))
Location: yogu-125

A message box at the top right says 'Successfully uploaded blob(s)' and 'Successfully uploaded 1 blob(s.)'.

Below this, there is a search bar 'Search blobs by prefix (case-sensitive)' and a 'Show deleted blobs' toggle switch.

At the bottom, there is a table of blobs:

Name	Modified	Access tier	Archive status	Blob type	Size	Lease state
WhatsApp Image 2024-08-09 at 1...	8/10/2024, 11:46:03 ...	Hot (Inferred)		Block blob	21.47 KiB	Available

The screenshot shows the Microsoft Azure Storage Blob Properties page for a file named "WhatsApp Image 2024-08-09 at 10.37.20 AM.jpeg". The blob was last modified on 8/10/2024 at 11:46:03 AM and created on 8/10/2024 at 11:46:03 AM. It is a Block blob with a size of 21.47 KiB and is in the Hot (Inferred) access tier. The blob is encrypted and has an ETAG of 0x8DCB903E9573232. The version-level immutability policy is disabled. The content type is image/jpeg, and the content MD5 is H20krdaEP7EgicdULHVw... . The blob URL is https://yoasdf.blob.core.windows.net/yogu-125/WhatsApp%20Image%202024-08-09%20at%2010.37.20%20AM.jpeg.

WhatsApp Image 2024-08-09 at 10.37.20 AM.jpeg

blob

Save Discard Download Refresh Delete Change tier Acquire lease Break lease

Overview Versions Snapshots Edit Generate SAS

Properties

URL	https://yoasdf.blob.core.windows.net/yogu-125/WhatsApp%20Image%202024-08-09%20at%2010.37.20%20AM.jpeg
LAST MODIFIED	8/10/2024, 11:46:03 AM
CREATION TIME	8/10/2024, 11:46:03 AM
VERSION ID	-
TYPE	Block blob
SIZE	21.47 KiB
ACCESS TIER	Hot (Inferred)
ACCESS TIER LAST MODIFIED	N/A
ARCHIVE STATUS	-
REHYDRATE PRIORITY	-
SERVER ENCRYPTED	true
ETAG	0x8DCB903E9573232
VERSION-LEVEL IMMUTABILITY POLICY	Disabled
CACHE-CONTROL	
CONTENT-TYPE	image/jpeg
CONTENT-MD5	H20krdaEP7EgicdULHVw...
CONTENT-ENCODING	

A screenshot of a Google Chrome browser window. The address bar at the top displays the URL: "sdfdgħ.blob.core.windows.net/yogu-125/WhatsApp%20Image%202024-08-09%20at%2010.37.20%20AM.jpeg". The main content area of the browser shows a portrait photograph of a young man with dark hair and a mustache, wearing a blue patterned shirt. The photo is set against a solid blue background and is centered on a black page. The browser interface includes standard navigation buttons (back, forward, search) and a tab bar with several other open tabs.