

REPORT ON MICROSOFT AZURE FUNDAMENTALS

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1)Sandbox:

Create a Linux virtual machine and install Nginx

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Task 1: Create a Linux virtual machine and install Nginx

Use the following Azure CLI commands to create a Linux VM and install Nginx. After your VM is created, you'll use the Custom Script Extension to install Nginx. The Custom Script Extension is an easy way to download and run scripts on your Azure VMs. It's just one of the many ways you can configure the system after your VM is up and running.

1. From Cloud Shell, run the following `az vm create` command to create a Linux VM:

Azure CLI

Copy

```
az vm create \
  --resource-group "learn-6ec78e0f-ef88-4fe2-a8ba-12310a5373d3" \
  --name my-vm \
  --public-ip-sku Standard \
  --image Ubuntu2204 \
  --admin-username azureuser \
  --generate-ssh-keys
```

Azure Cloud Shell

Switch to PowerShell

Restart

Manage files

New session

Type "az" to use Azure CLI

Type "help" to learn about Cloud Shell

```
varsithpranav18 [ ~ ]$ ^[[200~az vm create --resource-group "learn-6ec78e0f-ef88-4fe2-a8ba-12310a5373d3" --name my-vm --public-ip-sku Standard --image Ubuntu2204 --admin-username azureuser --generate-ssh-keys~
bash: $'\E[200~az': command not found
varsithpranav18 [ ~ ]$ az vm create --resource-group "learn-6ec78e0f-ef88-4fe2-a8ba-12310a5373d3" --name my-vm --public-ip-sku Standard --image Ubuntu2204 --admin-username azureuser --generate-ssh-keys
{
  "fqdns": "",
  "id": "/subscriptions/02dd49b6-b1df-4b19-bce6-b6188492ff0b/resourceGroups/learn-6ec78e0f-ef88-4fe2-a8ba-12310a5373d3/providers/Microsoft.Compute/virtualMachines/my-vm",
  "location": "westus",
  "macAddress": "00-0D-3A-31-FF-B2",
  "powerState": "VM running",
  "privateIpAddress": "10.0.0.4",
  "publicIpAddress": "40.83.189.167",
  "resourceGroup": "learn-6ec78e0f-ef88-4fe2-a8ba-12310a5373d3",
  "zones": ""
}
```

Access your web server

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2. Run the following `az vm extension set` command to configure Nginx on your VM:

Azure CLI

Copy

```
az vm extension set \
  --resource-group "learn-6ec78e0f-ef88-4fe2-a8ba-12310a5373d3" \
  --vm-name my-vm \
  --name customScript \
  --publisher Microsoft.Azure.Extensions \
  --version 2.1 \
  --settings '{"fileUri":["https://raw.githubusercontent.com/MicrosoftDocs/mslearn-welcome-to-azure/master/configure-nginx.sh"]}' \
  --protected-settings '{"commandToExecute": "./configure-nginx.sh"}
```

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

Azure Cloud Shell

Switch to PowerShell

Restart

Manage files

New session

"zones": ""

```
}
varsithpranav18 [ ~ ]$ az vm extension set --resource-group "learn-6ec78e0f-ef88-4fe2-a8ba-12310a5373d3" --vm-name my-vm --name customScript --publisher Microsoft.Azure.Extensions --version 2.1 --settings '{"fileUri":["https://raw.githubusercontent.com/MicrosoftDocs/mslearn-welcome-to-azure/master/configure-nginx.sh"]}' --protected-settings '{"commandToExecute": "./configure-nginx.sh"}'
{
  "autoUpgradeMinorVersion": true,
  "enableAutomaticUpgrade": null,
  "forceUpdateTag": null,
  "id": "/subscriptions/02dd49b6-b1df-4b19-bce6-b6188492ff0b/resourceGroups/learn-6ec78e0f-ef88-4fe2-a8ba-12310a5373d3/providers/Microsoft.Compute/virtualMachines/my-vm/extensions/customScript",
  "instanceView": null,
  "location": "westus",
  "name": "customScript",
  "protectedSettings": null,
  "protectedSettingsFromKeyVault": null,
  "provisionAfterExtensions": null,
  "provisioningState": "Succeeded",
  "publisher": "Microsoft.Azure.Extensions",
  "resourceGroup": "learn-6ec78e0f-ef88-4fe2-a8ba-12310a5373d3",
  "settings": {
    "fileUri": [
```

List the current network security group rules

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u. keep this browser tab open for later.

Task 2: List the current network security group rules

Your web server wasn't accessible. To find out why, let's examine your current NSG rules.

1. Run the following `az network nsg list` command to list the network security groups that are associated with your VM:

Azure CLI

```
az network nsg list \
  --resource-group "learn-6ec78e0f-ef88-4fe2-a8ba-12310a5373d3" \
  --query '[] .name' \
  --output tsv
```

Copy

You see this output:

Output

```
my-vmNSG
```

Copy

Azure Cloud Shell

Switch to PowerShell Restart Manage files New session

```
"vhd": null,
"writeAcceleratorEnabled": null
},
},
"tags": {},
"timeCreated": "2024-08-10T06:12:11.017019+00:00",
"type": "Microsoft.Compute/virtualMachines",
"userData": null,
"virtualMachineScaleSet": null,
"vmId": "382f1438-b020-49b7-a4f5-d64fcb854d8c",
"zones": null
}
]
varsithpranav18 [ ~ ]$ IPADDRESS=$(az vm list-ip-addresses --resource-group "learn-6ec78e0f-ef88-4fe2-a8ba-12310a5373d3" --name my-vm --query "[].virtualMachine.network.publicIpAddresses[*].ipAddress" --output tsv)
varsithpranav18 [ ~ ]$ curl --connect-timeout 5 http://$IPADDRESS
curl: (28) Failed to connect to 40.83.189.167 port 80 after 5002 ms: Timeout was reached
varsithpranav18 [ ~ ]$ echo $IPADDRESS
40.83.189.167
varsithpranav18 [ ~ ]$ az network nsg list --resource-group "learn-6ec78e0f-ef88-4fe2-a8ba-12310a5373d3" --query '[] .name' --output tsv
my-vmNSG
varsithpranav18 [ ~ ]$
```

Create the network security rule

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connections on port 80, which allows access over HTTP.

Task 3: Create the network security rule

Here, you create a network security rule that allows inbound access on port 80 (HTTP).

1. Run the following `az network nsg rule create` command to create a rule called `allow-http` that allows inbound access on port 80:

Azure CLI

```
az network nsg rule create \
  --resource-group "learn-6ec78e0f-ef88-4fe2-a8ba-12310a5373d3" \
  --nsg-name my-vmNSG \
  --name allow-http \
  --protocol tcp \
  --priority 100 \
  --destination-port-range 80 \
  --access Allow
```

Copy


For learning purposes, here you set the priority to 100. In this case, the

Azure Cloud Shell

Switch to PowerShell Restart Manage files New session

```
-ef88-4fe2-a8ba-12310a5373d3" --nsg-name my-vmNSG --name allow-http --protocol tcp \
--priority 100 --destination-port-range 80 --access Allow
{
  "access": "Allow",
  "destinationAddressPrefix": "*",
  "destinationAddressPrefixes": [],
  "destinationPortRange": "80",
  "destinationPortRanges": [],
  "direction": "Inbound",
  "etag": "W/\"16fe0e7a-ee14-4bd5-94a3-dd45d3d8b7ba\"",
  "id": "/subscriptions/02dd49b6-b1df-4b19-bce6-b6188492ff0b/resourceGroups/learn-6ec78e0f-ef88-4fe2-a8ba-12310a5373d3/providers/Microsoft.Network/networkSecurityGroups/my-vmNSG/securityRules/allow-http",
  "name": "allow-http",
  "priority": 100,
  "protocol": "Tcp",
  "provisioningState": "Succeeded",
  "resourceGroup": "learn-6ec78e0f-ef88-4fe2-a8ba-12310a5373d3",
  "sourceAddressPrefix": "*",
  "sourceAddressPrefixes": [],
  "sourcePortRange": "*",
  "sourcePortRanges": [],
  "type": "Microsoft.Network/networkSecurityGroups/securityRules"
}
varsithpranav18 [ ~ ]$
```

Access your web server again

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Task 4: 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.

① 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`

Copy

You see this response:

HTML

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

Copy

Azure Cloud Shell

Switch to PowerShell Restart Manage files ▾ New session ⋮

```
"protocol": "Tcp",
"provisioningState": "Succeeded",
"resourceGroup": "learn-6ec78e0f-ef88-4fe2-a8ba-12310a5373d3",
"sourceAddressPrefix": "*",
"sourceAddressPrefixes": [],
"sourcePortRange": "*",
"sourcePortRanges": [],
"type": "Microsoft.Network/networkSecurityGroups/securityRules"
}
varsithpranav18 [ ~ ]$ az network nsg rule list --resource-group "learn-6ec78e0f-ef88-4fe2-a8ba-12310a5373d3" --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
varsithpranav18 [ ~ ]$ curl --connect-timeout 5 http://$IPADDRESS
curl: (28) Failed to connect to 40.83.189.167 port 80 after 5002 ms: Timeout was reached
varsithpranav18 [ ~ ]$ <html><body><h2>Welcome to Azure! My name is my-vm.</h2></body></html>
bash: syntax error near unexpected token `<'
varsithpranav18 [ ~ ]$ curl --connect-timeout 5 http://$IPADDRESS
<html><body><h2>Welcome to Azure! My name is my-vm.</h2></body></html>
varsithpranav18 [ ~ ]$
```

Final output:

← ↻ ⚠ Not secure | 40.83.189.167

A ☆ 📄 📌 🔄 ⋮

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 website. The browser tabs include "[Microsoft Academic Verifica]" and "Get verified now". The address bar shows "verify.microsoft.com". The page has a blue header with the Microsoft Academic Verification logo and a user profile icon labeled "SS". Below the header, there are links for "Home", "FAQ", and "Support". The main heading is "Take advantage of your academic status". Below this, a paragraph states: "For academic status verification 'school' is defined to include 'schools, universities, colleges, technical/STEM schools, and other academic schools' throughout the verification process." A progress bar shows four steps: "Profile information" (checked), "Security Check" (checked), "Additional information" (unchecked), and "Verifying" (checked). Below the progress bar, a large green "Congratulations!" message is displayed, followed by the text "Your academic status has been successfully verified." and a blue "Continue" button. At the bottom, there are links for "Consumer Health", "Privacy", "Privacy Terms of use", and "Trademark", and a copyright notice "© Microsoft 2024".

Creation of resource groups

The screenshot shows the Microsoft Azure portal. The browser tabs include "Chrome", "File", "Edit", "View", "History", "Bookmarks", "Profiles", "Tab", "Window", "Help", and several open tabs like "(3) WhatsApp", "Create Your", "Exercise - C", "Resource g", "Microsoft", "PORTFOLIO", "WhatsApp", "52.160.111", and "Inbox (114)". The address bar shows "portal.azure.com/#browse/resourcegroups". The page has a blue header with the Microsoft Azure logo, a search bar, and a user profile icon labeled "iamyogeshsigamamni@...". Below the header, there are links for "Home" and "Resource groups". The "Resource groups" page shows a table of resource groups. The table has columns for "Name", "Subscription", and "Location". The table lists three resource groups: "NetworkWatcherRG", "RG", and "sec", all associated with "Azure for Students" and "Central India".

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

Creation of Virtual Machine

Microsoft Azure portal showing the 'Virtual machines' page. The page displays a table with one record:

Name	Subscription	Resource group	Location	Status	Operating system	Size	Public IP address	Disks
varsith-114	Azure for Students	RG	Central India	Running	Linux	Standard_D2s_v3	20.40.53.64	1

Below the table, a Cloud Shell terminal window is open, showing the command 'ssh varsith@20.40.53.64' and the resulting connection details, including the host's IP address and the user's password.

Hosting my portfolio using Azure Cloud Services

Web browser displaying a portfolio website. The website has a dark theme with a red sidebar. The sidebar contains a profile picture of Varsith Pranav S S, a "Web Developer" title, and a list of menu items: "About Me", "What I'm good at", "My Work", and "Contact Me". The main content area features an "About Me" section with a bio, a "Reflux HTML CSS Template" section with a description, and a social media footer.

Pricing calculator

AutoSave

ExportedEstimate

Search (Cmd + Ctrl + U)

HomeInsertDrawPage LayoutFormulasDataReviewViewAutomate

Paste

Segoe UI14A⁺A⁻

B I U

General

Conditional FormattingFormat as TableCell Styles

InsertDeleteFormat

CommentsShare

A1Microsoft Azure Estimate

	A	B	C	D	E	F	G
1	Microsoft Azure Estimate						
2	Your Estimate						
3	Service category	Service type	Custom name	Region	Description	Estimated monthly cost	Estimated upfront cost
4	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
5	Support			Support		\$0.00	\$0.00
6				Licensing Program	Microsoft Customer Agreement (MCA)		
7				Billing Account			
8				Billing Profile			
9				Total		\$137.24	\$0.00
10							
11	Disclaimer						
12	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/						
13	This estimate was created at 8/9/2024 4:04:33 AM UTC.						
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31							

Your Estimate

ReadyAccessibility: Investigate

100%

Total Cost of Ownership (TCO) Calculator

The image shows a PDF viewer interface. On the left, there are three document thumbnails. The first thumbnail is titled 'tco azure.pdf' and shows a 'Total Cost of Ownership (TCO) Calculator' interface with a large number '\$158,081'. The second thumbnail shows a line graph. The third thumbnail shows two pie charts. On the right, the first page of the PDF is displayed. The page title is 'Total Cost of Ownership (TCO) Calculator'. Below the title is a subtitle: 'Estimate the cost savings you can realize by migrating your workloads to Azure'. There are two links: 'My saved reports' and 'Sign In'. The main content area states: 'Over 5 year(s) with Microsoft Azure, your estimated cost savings could be as much as \$158,081'. Below this, there is a section titled 'Total on-premises vs. Azure cost over time' with a paragraph of text.

Creation of container

Microsoft Azure

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

Copilot

iamyogeshsigamamni@...
DEFAULT DIRECTORY

Home > varsith_1723277011804 | Overview > varsith

varsith | Containers

Storage account

Search

+ Container Change access level Restore containers Refresh Delete Give feedback

Search containers by prefix

Show deleted containers

Name	Last modified	Anonymous access level	Lease state	
<input type="checkbox"/> \$logs	8/10/2024, 1:34:10 PM	Private	Available	...
<input type="checkbox"/> varsith	8/10/2024, 1:36:42 PM	Blob	Available	...

Overview

Activity log

Tags

Diagnose and solve problems

Access Control (IAM)

Data migration

Events

Storage browser

Storage Mover

Partner solutions

Data storage

Containers

File shares

Queues

Tables

Security + networking

Data management

Settings

Configuration

Data Lake Gen2 upgrade

Resource sharing (CORS)

Microsoft Azure

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

Copilot

iamyogeshsigamamni@...
DEFAULT DIRECTORY

Home > varsith_1723277011804 | Overview >

varsith

Container

Search

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

Search blobs by prefix (case-sensitive)

Show deleted blobs

Add filter

Name	Modified	Access tier	Archive status	Blob type	Size	Lease state	
<input type="checkbox"/> gapay1.png	8/10/2024, 1:39:20 PM	Hot (Inferred)		Block blob	6.95 KiB	Available	...

Overview

Diagnose and solve problems

Access Control (IAM)

Settings

Authentication method: Access key (Switch to Microsoft Entra user account)

Location: varsith

Azure - Sign up x Outlook Log In | Micros... x Mail - Varsith Pranav - O... x gapay1.png - Microsoft / x New Tab

portal.azure.com/?feature.tokencaching=true&feature.internalgraphapiversion=true#view/Microsoft_Azure_Storage/BlobPropertiesBla...

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

Home > varsith_1723277011804 | Overview > varsith >

varsith Container

Search Upload Change access level

Overview

Diagnose and solve problems

Access Control (IAM)

Settings

Authentication method: Access key (Switch to Microsoft Entra user account)

Location: varsith

Search blobs by prefix (case-...)

Show deleted blobs

Add filter

Name

gapay1.png

gapay1.png Blob

Save Discard Download Refresh Delete Change tier Acquire lease Break lease Give feedback

Overview Versions Snapshots Edit Generate SAS

Properties

URL https://varsith.blob.core....

LAST MODIFIED 8/10/2024, 1:39:20 PM

CREATION TIME 8/10/2024, 1:39:20 PM

VERSION ID -

TYPE Block blob

SIZE 6.95 KiB

ACCESS TIER Hot (Inferred)

ACCESS TIER LAST MODIFIED N/A

ARCHIVE STATUS -

REHYDRATE PRIORITY -

SERVER ENCRYPTED true

ETAG 0x8DCB9138CC37C42

VERSION-LEVEL IMMUTABILITY POLICY Disabled

CACHE-CONTROL

CONTENT-TYPE image/png

CONTENT-MD5 cURLiZ2qd3ZZ2ja0illy+2Q==

CONTENT-ENCODING

CONTENT-LANGUAGE

CONTENT-DISPOSITION

LEASE STATUS Unlocked

LEASE STATE Available

LEASE DURATION -

