

# **REPORT ON MICROSOFT AZURE FUNDAMENTALS**

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Date	10.08.2024

# 1)Sandbox:

## Create a Linux virtual machine and install Nginx

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LEVEL 816975 / 23599 XP

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< PreviousUnit 3 of 14Next >

100 XP

### Exercise - Create an Azure virtual machine

10 minutes

Sandbox activated! Time remaining: 48 min

You have used 2 of 10 sandboxes for today. More sandboxes will be available tomorrow.

In this exercise, you create an Azure virtual machine (VM) and install Nginx, a popular web server.

You could use the Azure portal, the Azure CLI, Azure PowerShell, or an Azure Resource Manager (ARM) template.

Azure Cloud Shell

Switch to PowerShellRestartManage filesNew session

SSH key files '/home/sharmilaaa23/.ssh/id\_rsa' and '/home/sharmilaaa23/.ssh/id\_rsa.pub' have been generated under ~/.ssh to allow SSH access to the VM. If using machines without permanent storage, back up your keys to a safe location.

{  
 "fqdns": "",  
 "id": "/subscriptions/9e2deb73-2f73-46d9-96f9-f94827200755/resourceGroups/learn-ad40ed9a-d383-428a-9716-a0bd4ac8ad34/providers/Microsoft.Compute/virtualMachines/my-vm",  
 "location": "westus",  
 "macAddress": "00-0D-3A-5A-CE-C9",  
 "powerState": "VM running",  
 "privateIpAddress": "10.0.0.4",  
 "publicIpAddress": "40.112.144.240",  
 "resourceGroup": "learn-ad40ed9a-d383-428a-9716-a0bd4ac8ad34",  
 "zones": ""  
}  
sharmilaaa23 [ ~ ]\$ az vm extension set --resource-group "learn-ad40ed9a-d383-428a-9716-a0bd4ac8ad34" --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,  
}

## Access your web server

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&lt; PreviousUnit 9 of 14Next &gt;

100 XP

### Exercise - Configure network access

10 minutes

Sandbox activated! Time remaining: 46 min

You have used 2 of 10 sandboxes for today. More sandboxes will be available tomorrow.

In this exercise, you configure the access to the virtual machine (VM) you created earlier in this module.

Important

Azure Cloud Shell

Switch to PowerShellRestartManage filesNew session

"vmId": "5c6d99a4-c716-4872-bfa7-81c4dc523ebb",  
"zones": null  
}  
sharmilaaa23 [ ~ ]\$ IPADDRESS=\$(az vm list-ip-addresses --resource-group "learn-ad40ed9a-d383-428a-9716-a0bd4ac8ad34" --name my-vm --query "[].virtualMachine.network.publicIpAddresses[\*].ipAddress" --output tsv)  
sharmilaaa23 [ ~ ]\$ curl --connect-timeout 5 http://\$IPADDRESS  
curl: (28) Failed to connect to 40.112.144.240 port 80 after 5002 ms: Timeout was reached  
sharmilaaa23 [ ~ ]\$ curl: (28) Connection timed out after 5001 milliseconds  
bash: syntax error near unexpected token `28'  
sharmilaaa23 [ ~ ]\$ curl: (28) Connection timed out after 5001 milliseconds  
bash: syntax error near unexpected token `28'  
sharmilaaa23 [ ~ ]\$ echo \$IPADDRESS  
40.112.144.240  
sharmilaaa23 [ ~ ]\$ az network nsg list --resource-group "learn-ad40ed9a-d383-428a-9716-a0bd4ac8ad34" --query '[].name' --output tsv  
my-vmNSG  
sharmilaaa23 [ ~ ]\$ my-vmNSG  
bash: my-vmNSG: command not found  
sharmilaaa23 [ ~ ]\$ az network nsg rule list --resource-group "learn-ad40ed9a-d383-428a-9716-a0bd4ac8ad34" --nsg-name my-vmNSG  
[

## List the current network security group rules

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### 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.

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

Azure CLI

Copy

```
az network nsg list \
  --resource-group "learn-ad40ed9a-d383-428a-9716-a0bd4ac8ad34" \
  --query '[] .name' \
  --output tsv
```

You see this output:

Output

Copy

```
my-vmNSG
```

Azure Cloud Shell

Switch to PowerShell

Restart

Manage files

New session

```
sharmilaaa23 [ ~ ]$ az network nsg list --resource-group "learn-ad40ed9a-d383-428a-9716-a0bd4ac8ad34" --query '[] .name' --output tsv
my-vmNSG
sharmilaaa23 [ ~ ]$ my-vmNSG
bash: my-vmNSG: command not found
sharmilaaa23 [ ~ ]$ az network nsg rule list --resource-group "learn-ad40ed9a-d383-428a-9716-a0bd4ac8ad34" --nsg-name my-vmNSG
[
  {
    "access": "Allow",
    "destinationAddressPrefix": "*",
    "destinationAddressPrefixes": [],
    "destinationPortRange": "22",
    "destinationPortRanges": [],
    "direction": "Inbound",
    "etag": "W/\"985f0800-8169-49a6-9908-940e70b71743\"",
    "id": "/subscriptions/9e2deb73-2f73-46d9-96f9-f94827200755/resourceGroups/learn-ad40ed9a-d383-428a-9716-a0bd4ac8ad34/providers/Microsoft.Network/networkSecurityGroups/my-vmNSG/securityRules/default-allow-ssh",
    "name": "default-allow-ssh",
    "priority": 1000,
    "protocol": "Tcp",
    "provisioningState": "Succeeded",
    "resourceGroup": "learn-ad40ed9a-d383-428a-9716-a0bd4ac8ad34",
```

## Create the network security rule

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### Task 3: Create the network security rule

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

- 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

Copy

```
az network nsg rule create \
  --resource-group "learn-ad40ed9a-d383-428a-9716-a0bd4ac8ad34" \
  --nsg-name my-vmNSG \
  --name allow-http \
  --protocol tcp \
  --priority 100 \
  --destination-port-range 80 \
  --access Allow
```

For learning purposes, here you set the priority to 100. In this case, the priority doesn't matter. You would need to consider the priority if you had

Azure Cloud Shell

Switch to PowerShell

Restart

Manage files

New session

```
]
sharmilaaa23 [ ~ ]$ az network nsg rule list --resource-group "learn-ad40ed9a-d383-428a-9716-a0bd4ac8ad34" --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
sharmilaaa23 [ ~ ]$ Name                Priority    Port    Access
-----
default-allow-ssh   1000      22      Allow
bash: Name: command not found
bash: -----: command not found
bash: default-allow-ssh: command not found
sharmilaaa23 [ ~ ]$ az network nsg rule create --resource-group "learn-ad40ed9a-d383-428a-9716-a0bd4ac8ad34" --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/\"e6f4bfff8-133d-4bfd-8fea-640626476e0f\"",
```

## Access your web server again

## 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.

### 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:

```
Azure Cloud Shell
Switch to PowerShell Restart Manage files New session ...
"sourceAddressPrefix": "*",
"sourceAddressPrefixes": [],
"sourcePortRange": "*",
"sourcePortRanges": [],
"type": "Microsoft.Network/networkSecurityGroups/securityRules"
sharmilaaa23 [ ~ ]$ az network nsg rule list --resource-group "learn-ad40ed9a-d383-428a-9716-a0bd4ac8ad34" --nsg-name my-vmNSG --query '[Name, Priority, Port, destinationPortRange, Access:access]' --output table
Name Priority Port Access
-----
default-allow-ssh 1000 22 Allow
allow-http 100 80 Allow
sharmilaaa23 [ ~ ]$ Name Priority Port Access
-----
default-allow-ssh 1000 22 Allow
allow-http 100 80 Allow
bash: Name: command not found
bash: -----: command not found
bash: default-allow-ssh: command not found
bash: allow-http: command not found
sharmilaaa23 [ ~ ]$ curl --connect-timeout 5 http://$IPADDRESS
<html><body><h2>Welcome to Azure! My name is my-vm.</h2></body></html>
sharmilaaa23 [ ~ ]$
```

## Final output:



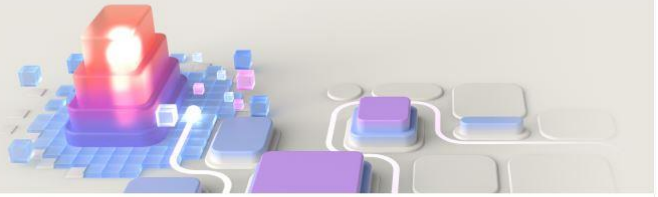
## 2) Azure Academic Services: Azure for Students

### Microsoft profile





**Sarmila S**  
sharmilaaa23@gmail.com



44 Badges 8 Trophies 0 Reputation points 0 Accepted answers 0 Following 0 Followers

LEVEL 8 65,475/72,099 XP

## Activity

Training

Plans

Challenges

### Past 7 days

AUG 10

You earned a badge by completing a module.



BADGE

Describe features and tools for managing and deploying Azure resources

## Creation of resource groups

Home >

**rg**  
Resource group

Search

+ Create Manage view Delete resource group Refresh Export to CSV Open query Assign tags Move Delete

### Overview

- Activity log
- Access control (IAM)
- Tags
- Resource visualizer
- Events
- Settings
- Cost Management
- Monitoring
- Automation
- Help

### Essentials

JSON View

#### Resources Recommendations (1)

Filter for any field... Type equals all Location equals all Add filter

Showing 1 to 10 of 10 records. Show hidden types

No grouping List view

Name	Type	Location	
sarmila	Virtual machine	Central India	...
sarmila-ip	Public IP address	Central India	...
SARMILA-nsg	Network security group	Central India	...
SARMILA-vnet	Virtual network	Central India	...
sarmila94_z1	Network Interface	Central India	...
sarmila_OsDisk_1_2afd530c889046b8bdac88957f611452	Disk	Central India	...
sarmilanet103	Network security group	Central India	...

## Creation of Virtual Machine

### Essentials

JSON View

Resource group (move) : rg

Status : Running

Location : Central India (Zone 1)

Subscription (move) : Azure for Students

Subscription ID : d2197172-228f-4e75-aaf7-44770237b68f

Availability zone : 1

Operating system : Linux

Size : Standard D2s v3 (2 vcpus, 8 GiB memory)

Public IP address : 4.186.27.47

Virtual network/subnet : SARMILA-vnet/default

DNS name : Not configured

Health state : -

Time created : 8/9/2024, 10:55 AM UTC

Tags (edit) : Add tags



### Virtual machine

Computer name	sarmila
Operating system	Linux
VM generation	V2
VM architecture	x64
Hibernation	Disabled
Host group	-
Host	-
Proximity placement group	-
Colocation status	N/A
Capacity reservation group	-
Disk controller type	SCSI



### Azure Spot



### Networking

Public IP address	4.186.27.47 ( Network interface <a href="#">sarmila460_z1</a> )
Public IP address (IPv6)	-
Private IP address	10.0.0.4
Private IP address (IPv6)	-
Virtual network/subnet	<a href="#">SARMILA-vnet/default</a>
DNS name	<a href="#">Configure</a>



### Size

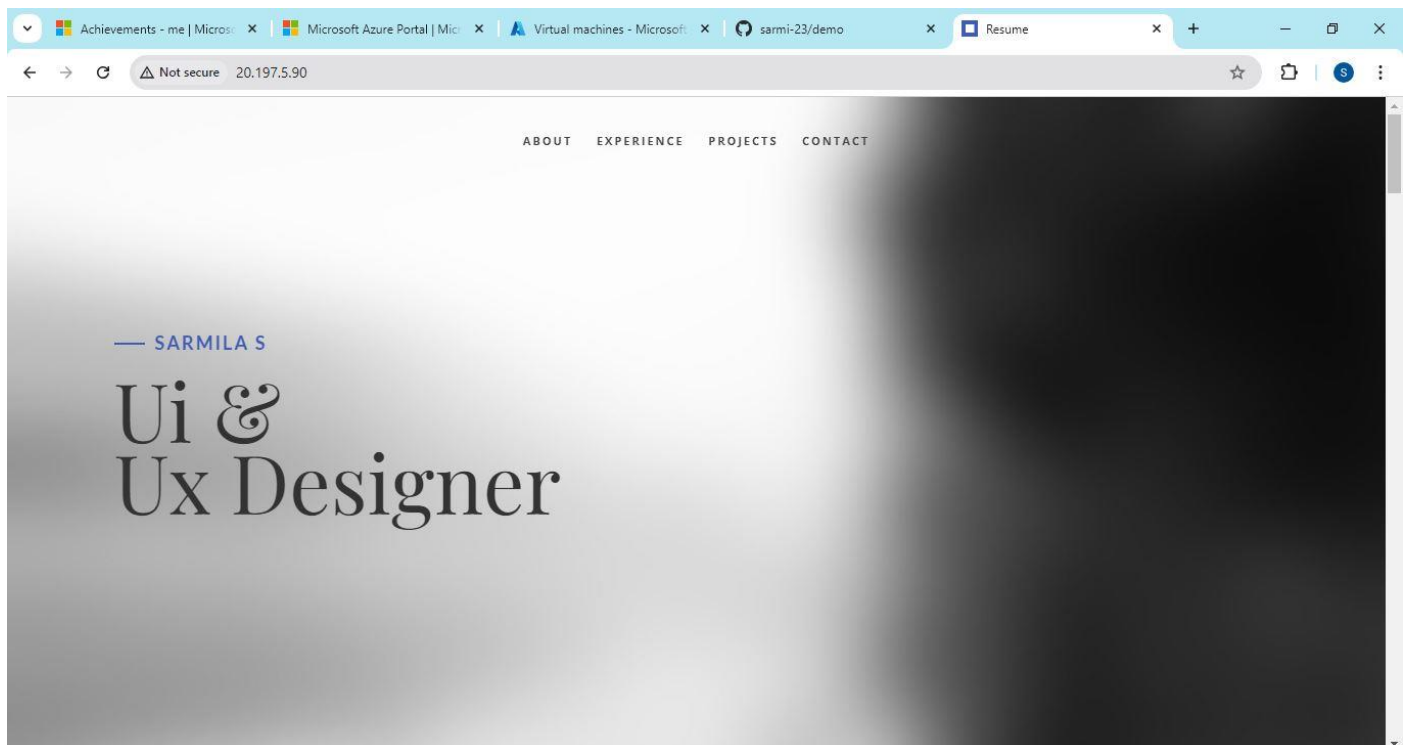
Size	Standard D2s v3
vCPUs	2
RAM	8 GiB



### Source image details

Source image publisher	canonical
Source image offer	ubuntu-24_04-lts

## Hosting my portfolio using Azure Cloud Services



Pricing calculator

1	Microsoft Azure Estimate					
2	Your Estimate					
3	Service category	Service type	Custom name	Region	Description	Estimated monthly cost
	Compute	Virtual Machines		West US	2 DC1s v3 (1 Core, 8 GB RAM) x 730 Hours (Pay as you go), Windows (License included), OS Only; 0 managed disks – S4; Inter Region transfer type, 5 GB outbound data transfer from West US to East Asia	\$230.68
4	Networking	Application Gateway		West US	Web Application Firewall tier, Medium Instance size; 2 Gateway hours instance(s) x 730 Hours, 1 TB Data processed unit(s), 5 GB Zone unit(s)	\$206.04
5	Databases	Azure SQL Database		West US	Single Database, vCore, General Purpose, Provisioned, Standard-series (Gen 5), Primary or Geo replica Disaster Recovery, Locally Redundant, 1 - 8 vCore Database(s) x 730 Hours, 32 GB Storage, SQL License (Pay as you go), RA-GRS Backup Storage Redundancy, 0 GB Point-In-Time Restore, 0 x 5 GB Long Term Retention	\$1,567.39
6						
7	Support			Support		\$0.00
8				Licensing Program	Microsoft Customer Agreement (MCA)	
9				Billing Account		
10				Billing Profile		
11				Total		\$2,004.10
12						\$0.00

Total Cost of Ownership (TCO) Calculator

On-premises cost breakdown summary		Azure cost breakdown summary	
Category	Cost	Category	Cost
Compute	\$558,462.31	Compute	\$182,256.84
Hardware	\$317,988.80	Data Center	\$0.00
Software	\$130,793.75	Networking	\$27,639.00
Electricity	\$16,079.76	Storage	\$148,856.83
Virtualization	\$93,600.00	IT Labor	\$29,650.50
Data Center	\$131,898.33		
Networking	\$245,226.77		
Storage	\$249,744.00		
IT Labor	\$29,845.50		
Total	\$1,215,177.00	Total	\$388,403.00

Estimated on-premises cost (3 year(s))	Estimated Azure cost (3 year(s))
--	----------------------------------

# Creation of container

Microsoft Azure

Search resources, services, and docs (G+)

sharmilaaa23@gmail.com

MICROSOFT LEARN SANDBOX

Home > sarmila\_1723276147984 | Overview > sarmila

sarmila

Storage account

Search

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

+ 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, 1:20:08 PM	Private	Available	...
<input type="checkbox"/> sarmi123	8/10/2024, 1:20:44 PM	Private	Available	...

Microsoft Azure

Search resources, services, and docs (G+)

sharmilaaa23@gmail.com

MICROSOFT LEARN SANDBOX

Home > sarmila\_1723276147984 | Overview > sarmila | Containers >

sarmi123

Container

Search

Overview

Diagnose and solve problems

Access Control (IAM)

Settings

Upload

Change access level

Refresh

Delete

Change tier

Acquire lease

Break lease

View snapshots

Create snapshot

...

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

Location: sarmi123

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"/> flo.jpg	8/10/2024, 1:21:49 PM	Hot (Inferred)		Block blob	329.62 KiB	Available	...

Achievement x Microsoft Az x Logout x Resume x Exercise - Cr x Exercise - Cr x flo.jpg - Mic x sarmila.blob x

sarmila.blob.core.windows.net/sarmi123/flo.jpg

This XML file does not appear to have any style information associated with it. The document tree is shown below:

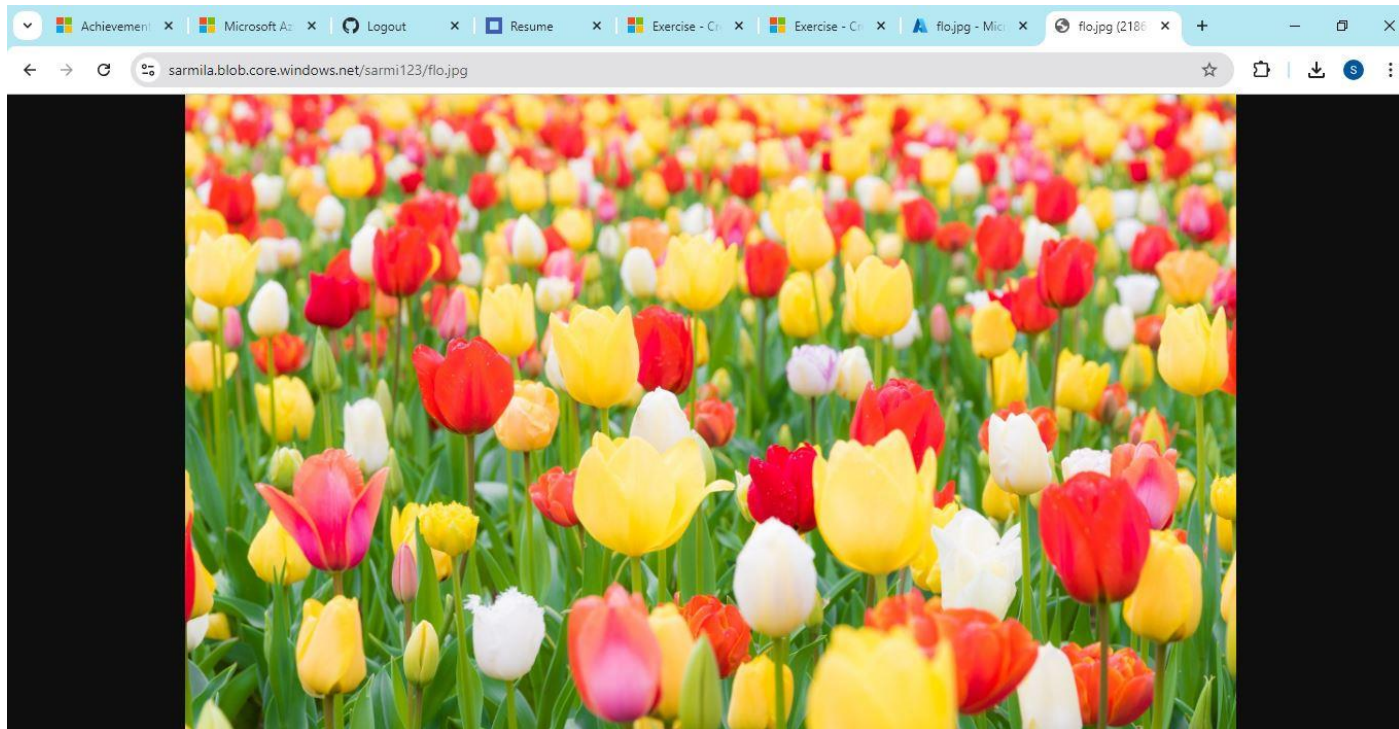
<Error>

<Code>ResourceNotFound</Code>

<Message>The specified resource does not exist. RequestId:2c7aeb49-701e-0056-5dfa-eaf7ef000000 Time:2024-08-10T07:52:33.8972123Z</Message>

</Error>





Microsoft Azure

Search resources, services, and docs (G+)

sharmilaaa23@gmail.com  
MICROSOFT LEARN SANDBOX

Home >

### Recent

Manage view Refresh Export to CSV Clear Assign tags Group by none

Filter for any field... Subscription equals all Resource Group equals all Type equals all Location equals all Add filter

<input type="checkbox"/>	Name ↑	Type	Location	Resource Group	Subscription	Last accessed
<input type="checkbox"/>	sarmila	Storage account		learn-22f4c543-3af0-45bb...	Concierge Subscription	3 minutes ago
<input type="checkbox"/>	learn-22f4c543-3af0-45bb-bd5d-03affba2b88a	Resource group		learn-22f4c543-3af0-45bb...	Concierge Subscription	4 minutes ago