

LOYALIST COLLEGE IN TORONTO

Task 1: Use a template to provision an infrastructure

Task 2: Configure an Azure Load Balancer.

Task 3: Configure an Azure Application Gateway.

In this lab we'll learn about the concepts of load balancer which includes the configuration and testing of public load balancer and application gateway.

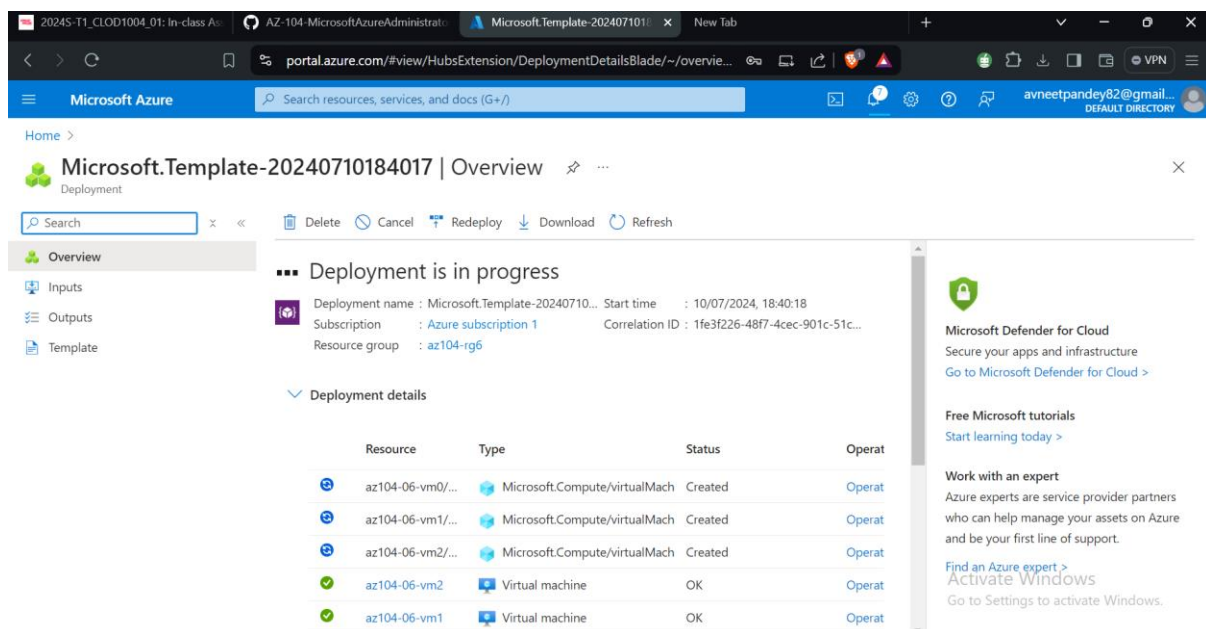
TASK 1:

In this task we'll create virtual network, network security group and virtual machines using a template.

We are provided by the parameters and template file to create our own custom template. We uploaded those file and run the validations and created our own custom template.

Note: Here few of the students faced the issue while validations is because of the VM Size which is not compatible to the azure subscription that they had. So we need to select the size according to the availability of the size.

Here the template took 3 minutes to complete the deployment.



The screenshot shows the Azure portal interface for a deployment named "Microsoft.Template-20240710184017". The deployment is in progress. The left sidebar shows the "Overview" tab selected. The main content area displays the deployment details, including the deployment name, subscription, resource group, and start time. A table lists the resources created during the deployment.

Resource	Type	Status	Operat
az104-06-vm0/...	Microsoft.Compute/virtualMach	Created	Operat
az104-06-vm1/...	Microsoft.Compute/virtualMach	Created	Operat
az104-06-vm2/...	Microsoft.Compute/virtualMach	Created	Operat
az104-06-vm2	Virtual machine	OK	Operat
az104-06-vm1	Virtual machine	OK	Operat

20245-T1_CLOD1004_01: In-class As...

AZ-104-MicrosoftAzureAdministrat...

Microsoft.Template-202407101...

New Tab

portal.azure.com/#view/HubsExtension/DeploymentDetailsBlade/~/_/overview/id/...

Microsoft Azure

Search resources, services, and docs (G+)

avneetpandey82@gmail...
DEFAULT DIRECTORY

Home >

Microsoft.Template-20240710184017 | Overview

Deployment

Search

DeleteCancelRedeployDownloadRefresh

Overview

Inputs

Outputs

Template

✓ Your deployment is complete

Deployment name : Microsoft.Template-202407101...

Subscription : Azure subscription 1

Resource group : az104-rg6

Start time : 10/07/2024, 18:40:18

Correlation ID : 1fe3f226-48f7-4cec-901c-51c8...

Deployment details

Next steps

Go to resource group

Give feedback

Tell us about your experience with deployment

Deployment succeeded

Deployment 'Microsoft.Template-20240710184017' was successfully deployed to resource group 'az104-rg6'.

Dismiss toast notification

Pin to dashbo...Go to resource gr...

Cost management

Get notified to stay within your budget and prevent unexpected charges on your bill.

Set up cost alerts >

Microsoft Defender for Cloud

Secure your apps and infrastructure

Go to Microsoft Defender for Cloud >

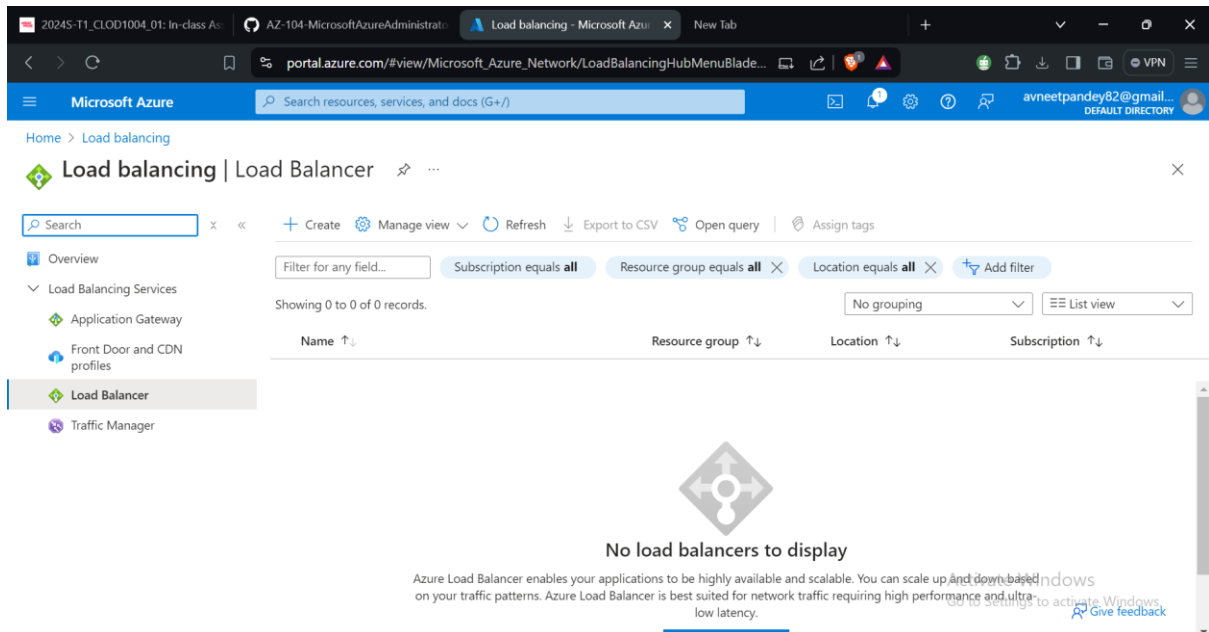
Free Microsoft tutorials

Start learning today > activate Windows.

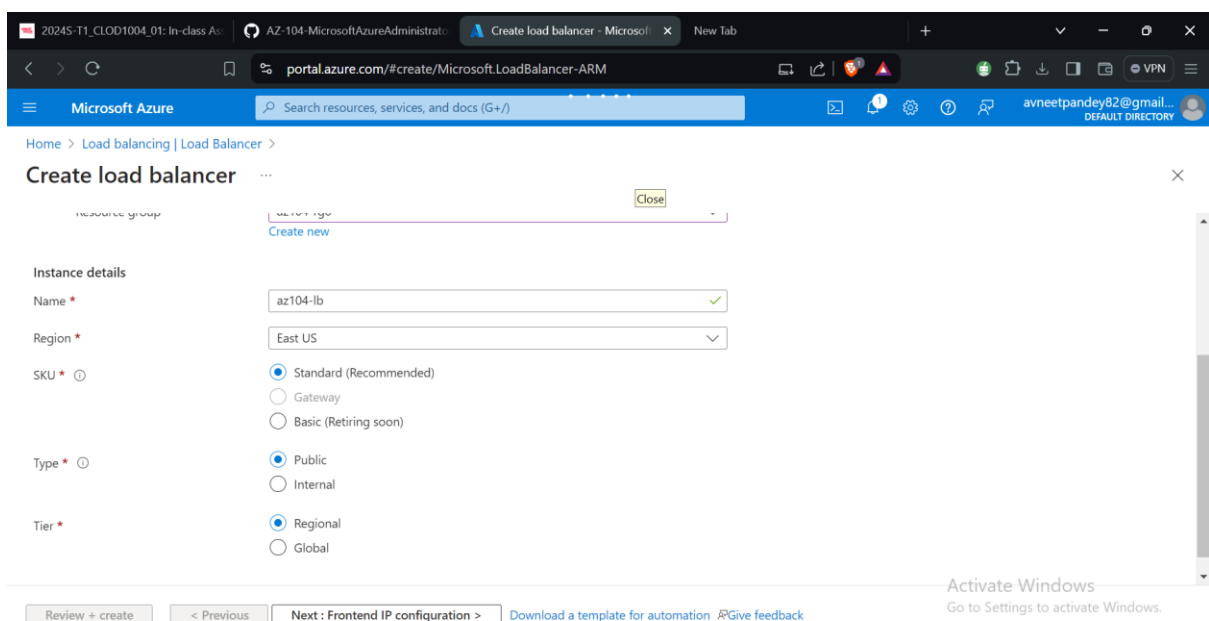
Task 2: Configure Azure Load Balancer

Here we will implement the Azure Load Balancer in front of two virtual machines. Its configuration contains the front-end IP address to verify the connection, a backend pool and how the connection will travel the load balancer.

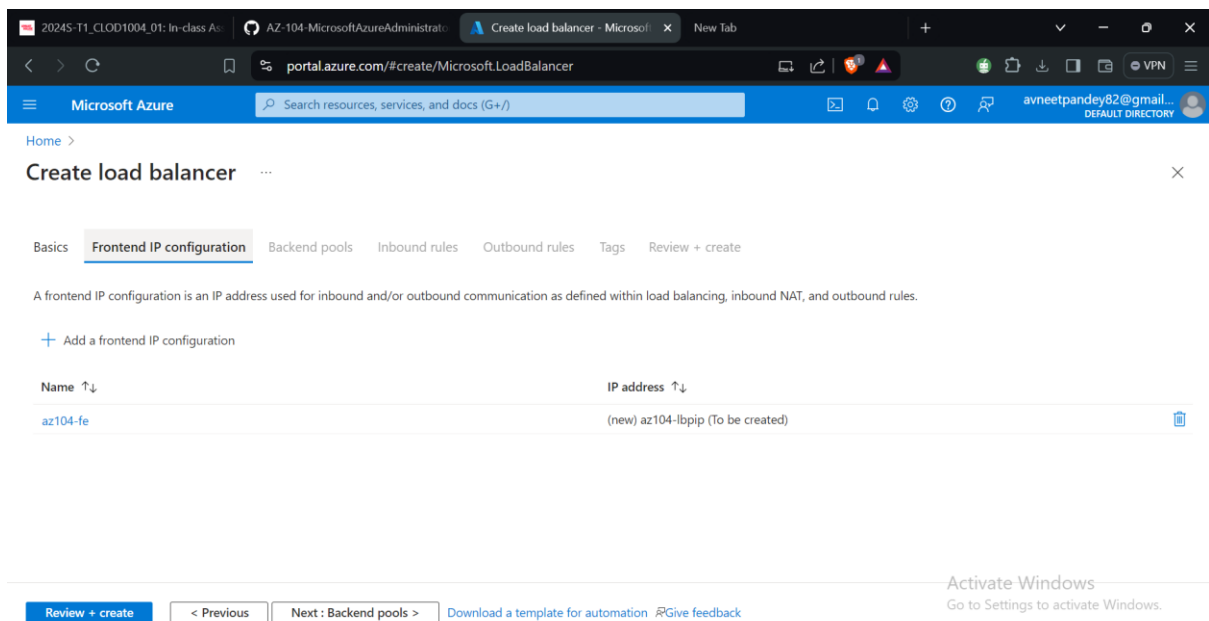
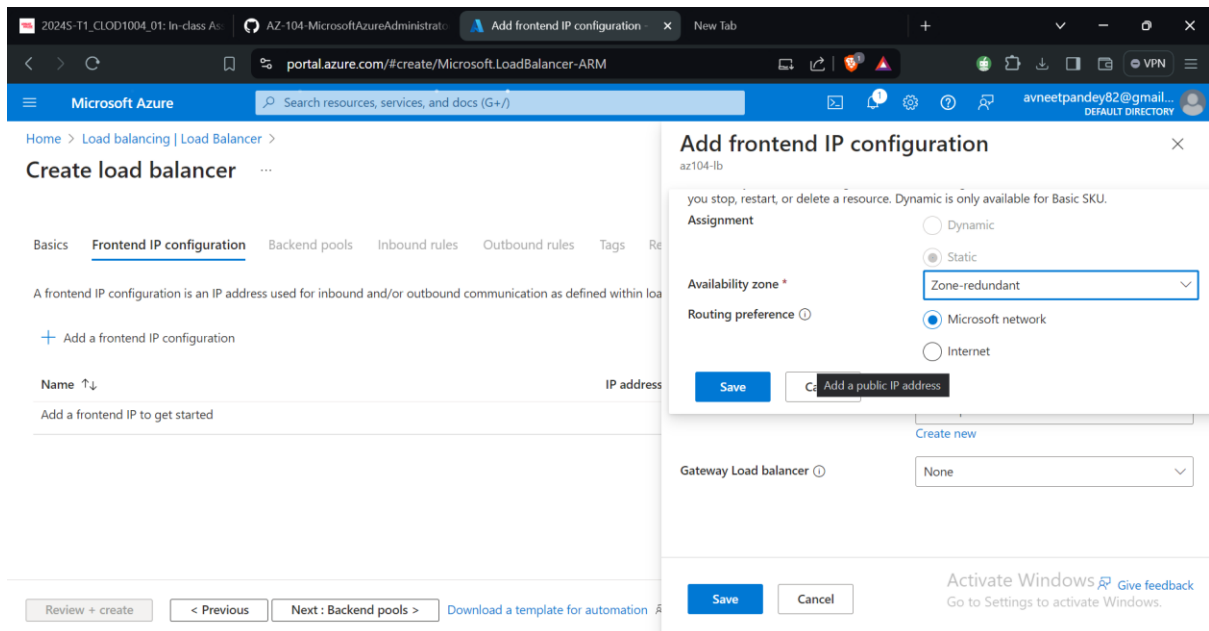
- Create a load balancer while switching to the load balancer page and click on the Create.



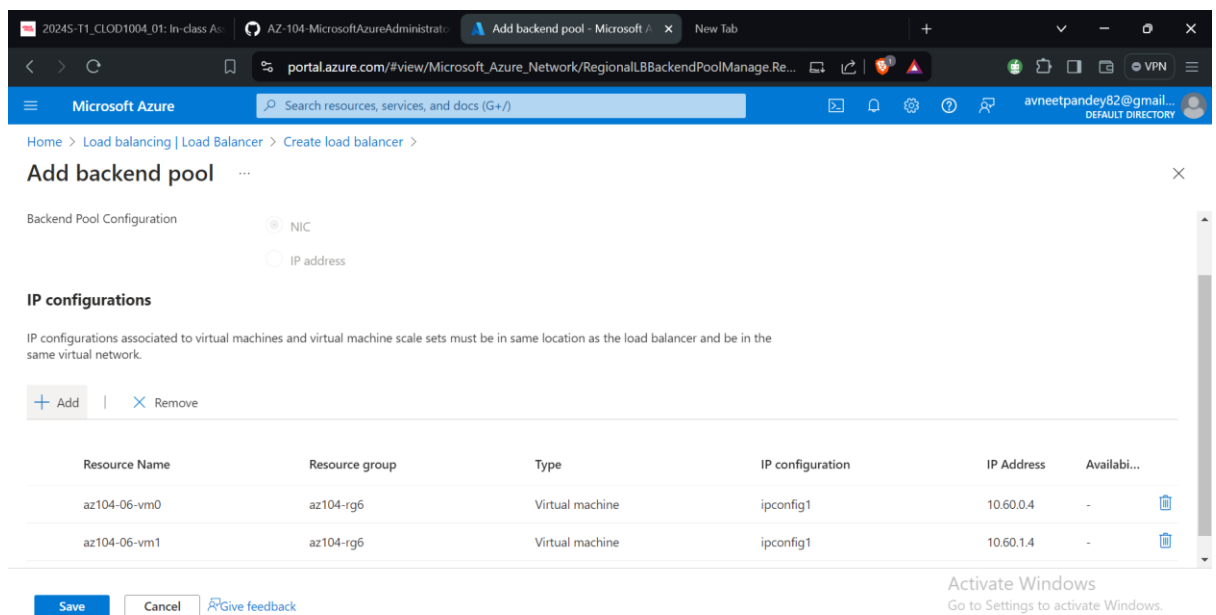
- Create load balancer based on the given instruction and click on the next



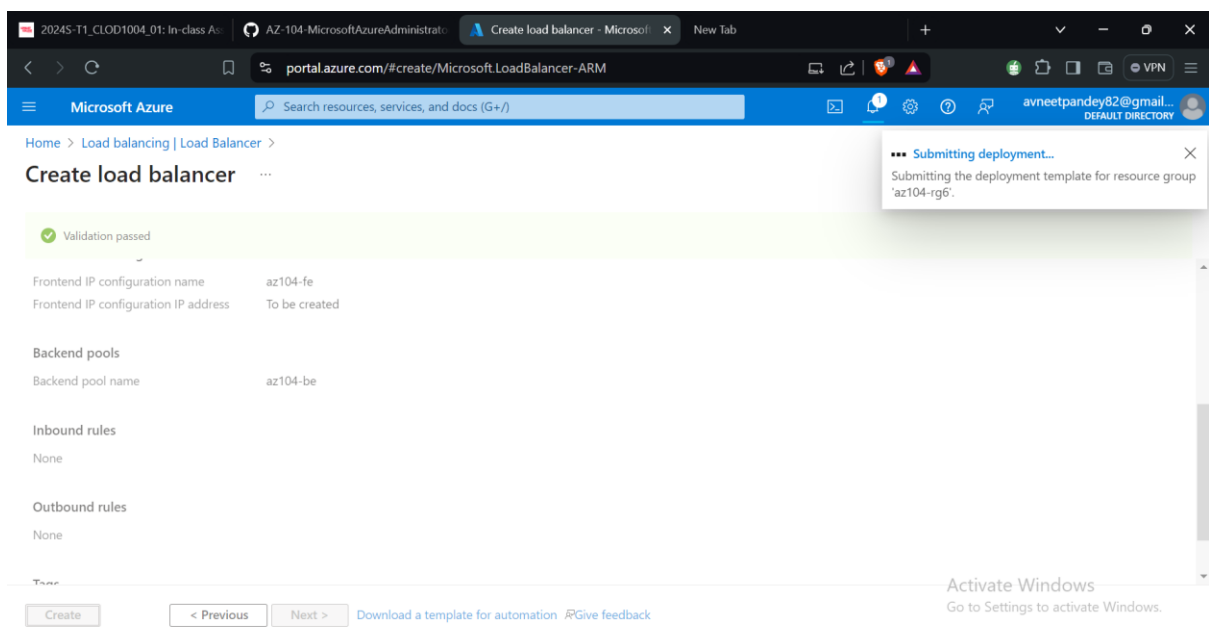
- Here we will create new frontend IP configurations where we have to create new public IP address based on the given command



- On the Backend pools similarly create backend pools.
Note: It took 9-10 minutes to create the IP address



- After reviewing the every step, clicked on the review and create



- Once the deployment is created then configure the rules to distribute the incoming traffic. Click on go to the resources

2024S-T1_CLOD1004_01: In-class As AZ-104-MicrosoftAzureAdministrati az104-lb - Microsoft Azure x New Tab

portal.azure.com/#@avneetpandey82gmail.onmicrosoft.com/resource/subscriptions/c...

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

Home > MicrosoftLoadBalancer-20240710192444 | Overview >

az104-lb Load balancer

Search

Move Delete Refresh Give feedback

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Settings

Frontend IP configuration

Backend pools

Health probes

Load balancing rules

Inbound NAT rules

Outbound rules

Properties

Essentials

Resource group (move) az104-rg6

Location East US

Subscription (move) Azure subscription 1

Subscription ID c031a4d8-441d-4287-9edc-3d9c37aa32ca

SKU Standard

Tags (edit) Add tags See more

Backend pool az104-be (2 virtual machines)

Load balancing rule -

Health probe -

NAT rules 0 inbound

Tier Regional

Configure high availability and scalability for your applications

Activate Windows Go to Settings to activate Windows.

https://portal.azure.com/#@avneetpandey82gmail.onmicrosoft.com/resource/subscriptions/c031a4d8-441d-4287-9edc-3d9c37aa32ca/resourcegroups/az104-rg6/providers/Microsoft.Network/loadBalancers/az104-lb/backendPools

- In the setting blade click on the load balancing rules and add the rules given in the documents

2024S-T1_CLOD1004_01: In-class As AZ-104-MicrosoftAzureAdministrati az104-lb - Microsoft Azure x New Tab

portal.azure.com/#@avneetpandey82gmail.onmicrosoft.com/resource/subscriptions/c...

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

Home > MicrosoftLoadBalancer-20240710192444 | Overview > az104-lb

az104-lb | Load balancing rules Load balancer

Search

Tags

Diagnose and solve problems

Settings

Frontend IP configuration

Backend pools

Health probes

Load balancing rules

Inbound NAT rules

Outbound rules

Properties

Locks

Monitoring

+ Add Refresh Delete

Filter by name...

No results.

Activate Windows Go to Settings to activate Windows.

Give feedback

https://portal.azure.com/#@avneetpandey82gmail.onmicrosoft.com/resourc...

20245-T1_CLOD1004_01: In-class A... AZ-104-MicrosoftAzureAdministrat... Add load balancing rule - Micro... New Tab

portal.azure.com/#view/Microsoft_Azure_Network/LoadBalancingRuleManage.ReactVi...

Microsoft Azure Search resources, services, and docs (G+/f) avneetpandey82@gmail... DEFAULT DIRECTORY

Home > MicrosoftLoadBalancer-20240710192444 | Overview > az104-lb | Load balancing rules >

Add load balancing rule

az104-lb

backend pool instances. Only backend instances that the health probe considers healthy receive new traffic. [Learn more.](#)

Name * az104-lbrule

IP Version * ☒ IPv4 ☐ IPv6

Frontend IP address * az104-fe (48.216.164.2)

Backend pool * az104-be

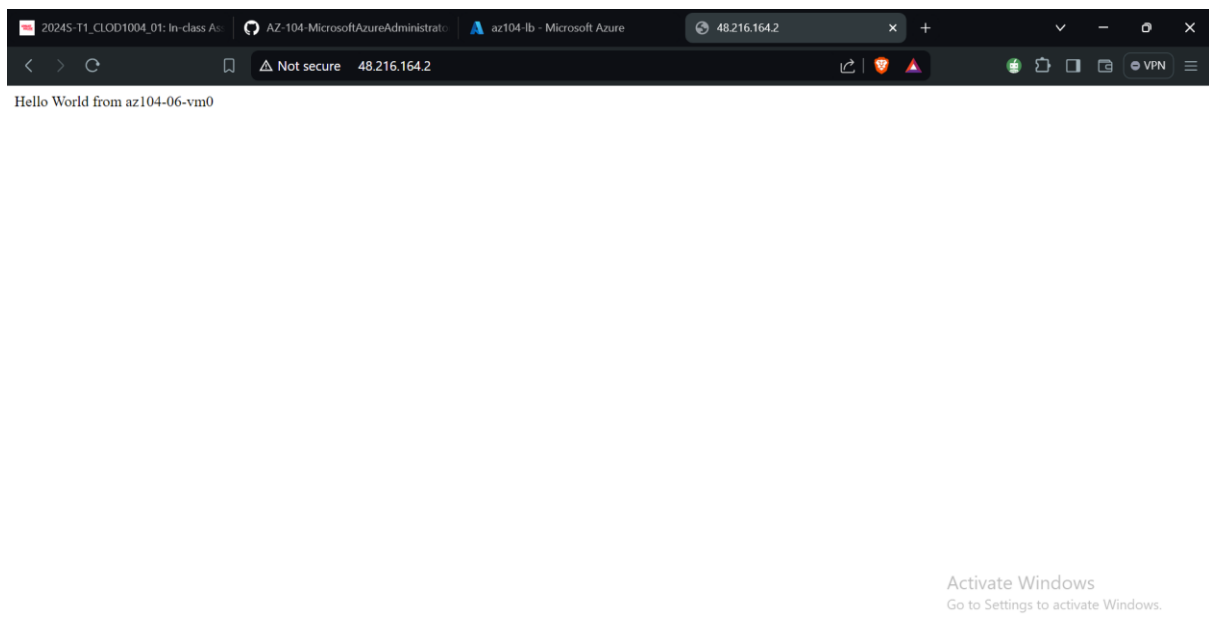
Protocol ☒ TCP ☐ UDP

Port * 80

[Save](#) [Cancel](#)

Activate Windows Go to Settings to activate Windows. [Give feedback](#)

- Copy the public ip address from the frontend ip configuration blade and paste it in the browser URL to review the text present.



20245-T1_CLOD1004_01: In-class As...

AZ-104-MicrosoftAzureAdministrat...

az104-lb - Microsoft Azure

48.216.164.2

x

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🔖

⚠ Not secure

48.216.164.2

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VPN

☰

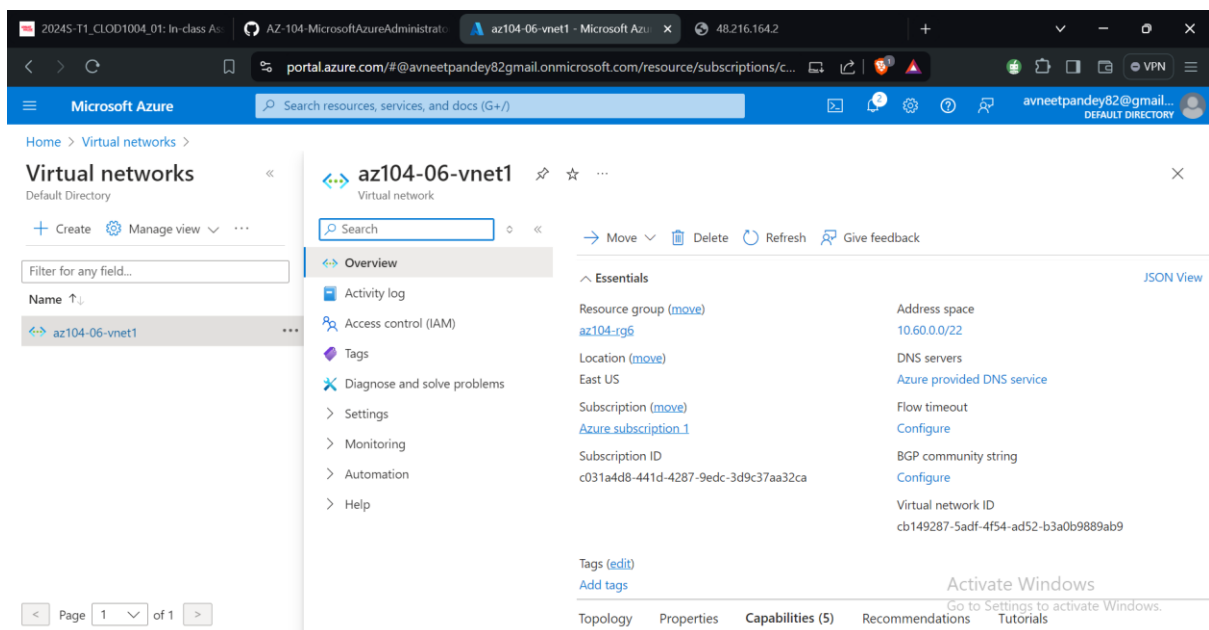
Hello World from az104-06-vm1

Activate Windows
Go to Settings to activate Windows.

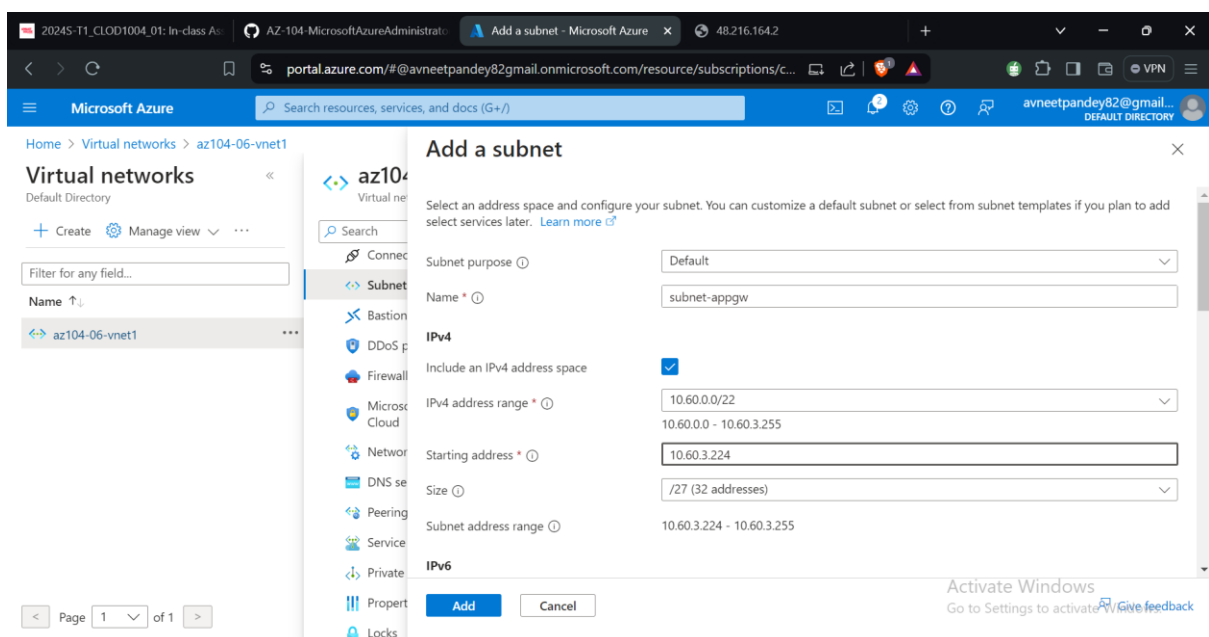
Task 3: Configure an Azure Application Gateway

Here we add the azure application gateway before the Azure Virtual Machines. It provides layer7 multiple security feature like load balancing, Firewall, SSL termination and end-to-end encryption for the resources that we created in the backend pool.

- Go to the virtual network and select the mentioned virtual networks.



- Add the subnets in the selected virtual network with the given configuration.



Virtual networks

az104-06-vnet1 | Subnets

Name	IPv4	IPv6	Available IPs	Delegated
subnet0	10.60.0.0/24	-	250	-
subnet1	10.60.1.0/24	-	250	-
subnet2	10.60.2.0/24	-	250	-
subnet-appgw	10.60.3.224/27	-	27	-

- Go to the application gateways and create new gateway with the given configuration

Create application gateway

Changes you make on this tab may affect any configuration you've done on other tabs. Review all options prior to creating the application gateway.

Instance count: 2

Availability zone: Zones 1

HTTP2: Disabled

IP address type: IPv4 only

Configure virtual network

Virtual network: az104-06-vnet1

Subnet: subnet-appgw (10.60.3.224/27)

- Add Backend pool

20245-T1_CLOD1004_01: In-class A...

AZ-104-MicrosoftAzureAdministrat...

Add a backend pool - Microsof...

48.216.164.2

portal.azure.com/#create/Microsoft.ApplicationGateway-ARM

Microsoft Azure

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DEFAULT DIRECTORY

Home > Load balancing | Application Gateway >

Create application gateway

Application gateway needs at least one valid Backend pool. Click 'Add a backend pool' to create a new backend pool.

✓ Basics

✓ Frontends

① Backends

④ Configuration

⑤ Tags

⑥ Review + create

A backend pool is a collection of resources to which your application gateway can send traffic. A backend pool can contain virtual machines, virtual machine scale sets, app services, IP addresses, or fully qualified domain names (FQDN). ⓘ

Add a backend pool

Backend pool	Targets
No results	

Previous

Next : Configuration >

Add a backend pool.

A backend pool is a collection of resources to which your application gateway can send traffic. A backend pool can contain virtual machines, virtual machines scale sets, IP addresses, domain names, or an App Service.

Name *

Add backend pool without targets

Yes

No

Backend targets

0 items

Target type

IP address or FQDN

Target

Add

Cancel

Activate Windows

Go to Settings to activate Windows.

20245-T1_CLOD1004_01: In-cla...

AZ-104-MicrosoftAzureAdministrat...

Create application gateway - M...

48.216.164.2

portal.azure.com/#create/Microsoft.ApplicationGateway-ARM

Microsoft Azure

Search resources, services, and docs (G+)

avneetpandey82@gmail...
DEFAULT DIRECTORY

Home > Load balancing | Application Gateway >

Create application gateway

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④ Configuration

⑤ Tags

⑥ Review + create

A backend pool is a collection of resources to which your application gateway can send traffic. A backend pool can contain virtual machines, virtual machine scale sets, app services, IP addresses, or fully qualified domain names (FQDN). ⓘ

Add a backend pool

Backend pool	Targets
az104-appgwbe	> 2 targets

Previous

Next : Configuration >

Activate Windows

Go to Settings to activate Windows.

Home > Load balancing | Application Gateway >

Create application gateway

⚠ Changes you make on this tab may affect any configuration you've done on other tabs. Review all options prior to creating the application gateway.

✓ Basics ✓ Frontends ✓ **Backends** ⚙ Configuration ⚙ Tags ⚙ Review + create

A backend pool is a collection of resources to which your application gateway can send traffic. A backend pool can contain virtual machines, virtual machine scale sets, app services, IP addresses, or fully qualified domain names (FQDN).

[Add a backend pool](#)

Backend pool	Targets	
az104-appgwbe	> 2 targets	...
az104-imagebe	> 1 target	...
az104-videobe	> 1 target	...

Previous Next: Configuration >

https://portal.azure.com/#

Activate Windows
Go to Settings to activate Windows.

Home > Load balancing | Application Gateway >

Create application gateway

✓ Basics ✓ Frontends ✓ Backends **⚙ Configuration**

Create routing rules that link your frontend(s) and backend(s). You can



Frontends

[+ Add a frontend IP](#)

Public: (new) az104-gwpip

Previous Next: Tags >

Add a routing rule

Configure a routing rule to send traffic from a given frontend IP address to one or more backend targets. A routing rule must contain a listener and at least one backend target.

Rule name * az104-gwrule ✓

Priority * ⓘ 10 ✓

* Listener * **Backend targets**

Choose a backend pool to which this routing rule will send traffic. You will also need to specify a set of Backend settings that define the behavior of the routing rule.

Target type ☒ Backend pool ☐ Redirection

Backend target * ⓘ az104-appgwbe

[Add new](#)

az104-http

[Add new](#)

Backend settings * ⓘ

Path-based routing

You can route traffic from this rule's listener to different backend targets based on the URL path of the request. You can also apply a different set of Backend settings based on the URL path.

Add Cancel

Activate Windows
Go to Settings to activate Windows.

20245-T1_CLOD1004_01: In-class A... AZ-104-MicrosoftAzureAdministrat... Add a routing rule - Microsoft / 48.216.164.2

portal.azure.com/#create/Microsoft.ApplicationGateway-ARM

Microsoft Azure Search resources, services, and docs (G+/f) avneetpandey82@gmail... DEFAULT DIRECTORY

Home > Load balancing | Application Gateway >

Create application gateway

✓ Basics ✓ Frontends ✓ Backends **Configuration**

Create routing rules that link your frontend(s) and backend(s). You can

Frontends
+ Add a frontend IP

Public: (new) az104-gwpip

Add a routing rule

target type BACKEND POOL NEW FRONTEND

Backend target * ? az104-appgwbe Add new

Backend settings * ? az104-http Add new

Path-based routing

You can route traffic from this rule's listener to different backend targets based on the URL path of the request. You can also apply a different set of Backend settings based on the URL path. ?

Path	Target name	Backend setting name	Backend pool
/image/*	images	az104-http	az104-imagebe
/video/*	video	az104-http	az104-videobe

Add multiple targets to create a path-based rule

Previous Next: Tags >

Add Cancel

Activate Windows
Go to Settings to activate Windows.

20245-T1_CLOD1004_01: In-class A... AZ-104-MicrosoftAzureAdministrat... Create application gateway - M... 48.216.164.2

portal.azure.com/#create/Microsoft.ApplicationGateway-ARM

Microsoft Azure Search resources, services, and docs (G+/f) avneetpandey82@gmail... DEFAULT DIRECTORY

Home > Load balancing | Application Gateway >

Create application gateway

✓ Basics ✓ Frontends ✓ Backends **Configuration** Tags Review + create

Create routing rules that link your frontend(s) and backend(s). You can also add more backend pools, add a second frontend IP configuration if you haven't already, or edit previous configurations. ?

Frontends
+ Add a frontend IP

Public: (new) az104-gwpip

Routing rules
+ Add a routing rule

az104-gwrule
[Manage Backend settings](#)

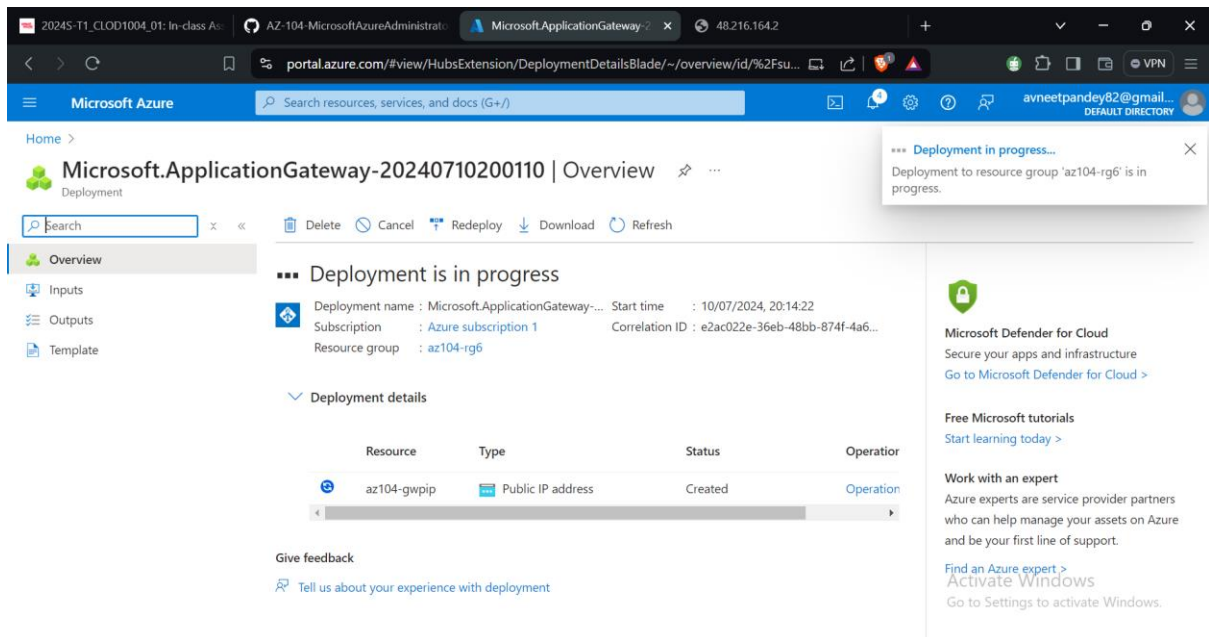
Backend pools
+ Add a backend pool

az104-appgwbe
az104-imagebe
az104-videobe

Previous Next: Tags >

Activate Windows
Go to Settings to activate Windows.

- Once rules are created then click on the review + create and create



Once the application gateway is deployed then go to the overview blade and copy the frontend public IP address. Paste the ip address in the browser URL.

Images: <http://20.51.249.18/image/>

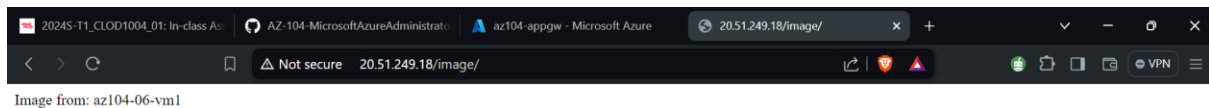
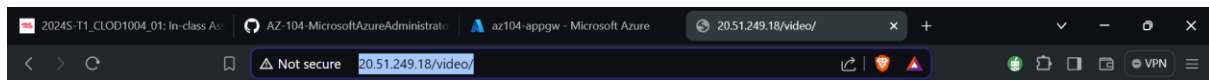


Image from: az104-06-vm1

Activate Windows
Go to Settings to activate Windows.

Videos: <http://20.51.249.18/video/>



In this lab we configured the Azure Load Balancer and application gateway to manage the network traffic for the public hosted website.

The Load Balancer will distribute the incoming request from the layer 4 for the efficient utilization of resources and application gateway in layer 7 is responsible for the security.

This setup helps us to filter out the content based on the type such as images and videos. This is important to efficiently managing the resources, optimizing performances and reliability of the cloud based web application