Module 7 : Assignment 1

Tasks To Be Performed:

1. Deploy 2 VMs with Ubuntu and Apache2 installed

2. Change index.html to include the following text

a. “This is VM1” on VM1

b. “This is VM2” on VM2

3. Create a load balancer which will balance the traffic between these two VMs

Solution:

1. Deploy 2 VMs with Ubuntu and Apache2 installed

Home > Resource groups >

Create a resource group ...

Basics Tags Review + create

Resource group - A container that holds related resources for an Azure solution. The resource group can include all the resources for the solution, or only those resources that you want to manage as a group. You decide how you want to allocate resources to resource groups based on what makes the most sense for your organization. Learn more

Project details

Subscription * : Free Trial

Resource group * : Module7

Resource details

Region * : (Asia Pacific) Southeast Asia

Review + create | < Previous | Next : Tags >

Home > Virtual networks >

Create virtual network ...

Basics | Security | IP addresses | Tags | Review + create

Azure Virtual Network (VNet) is the fundamental building block for your private network in Azure. VNet enables many types of Azure resources, such as Azure Virtual Machines (VM), to securely communicate with each other, the internet, and on-premises networks. VNet is similar to a traditional network that you'd operate in your own data center, but brings with it additional benefits of Azure's infrastructure such as scale, availability, and isolation.
Learn more.

Project details

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription * : Free Trial

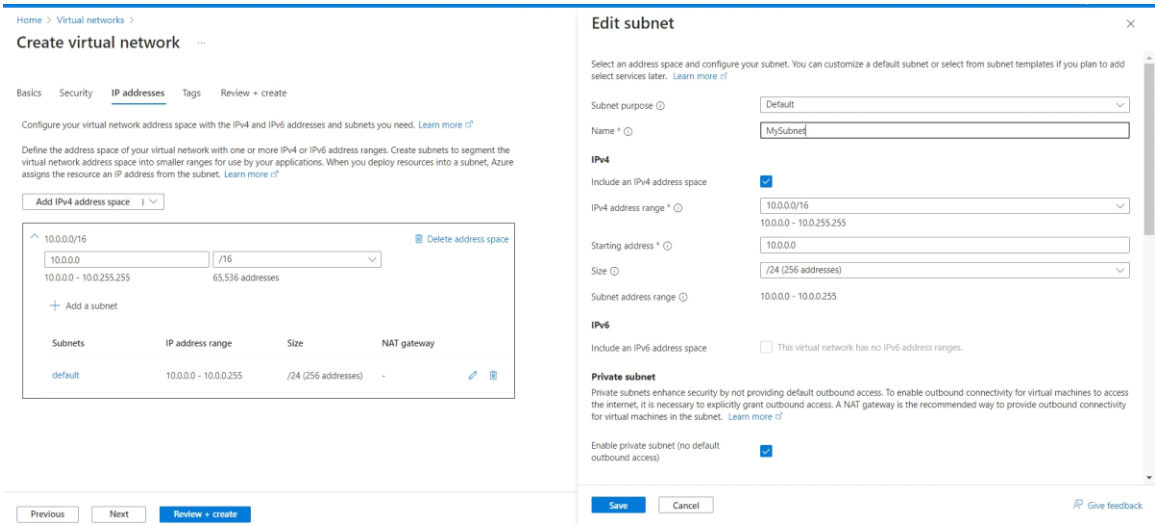
Resource group * : Module7
Create new

Instance details

Virtual network name * : MyVnet

Region * : (Asia Pacific) Southeast Asia
Deploy to an Azure Extended Zone

Previous | Next | Review + create



Home > Virtual networks >

Create virtual network

Basics | Security | **IP addresses** | Tags | Review + create

Configure your virtual network address space with the IPv4 and IPv6 addresses and subnets you need. Learn more

Define the address space of your virtual network with one or more IPv4 or IPv6 address ranges. Create subnets to segment the virtual network address space into smaller ranges for use by your applications. When you deploy resources into a subnet, Azure assigns the resource an IP address from the subnet. Learn more

Add IPv4 address space

10.0.0.0/16 — Delete address space

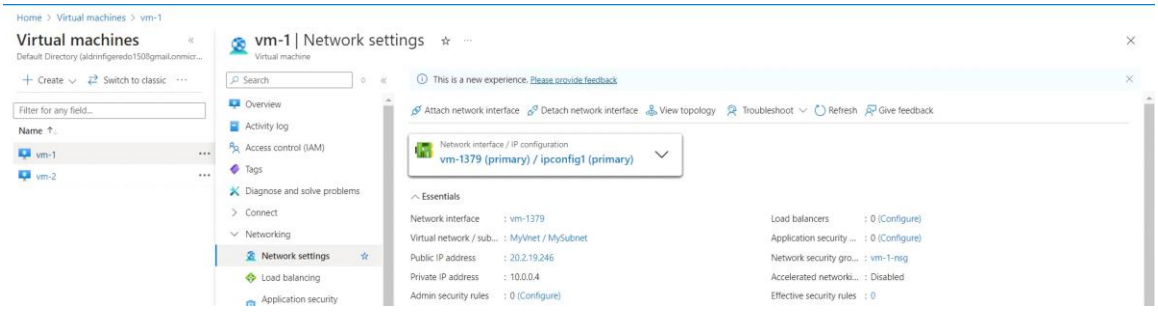
10.0.0.0 /16

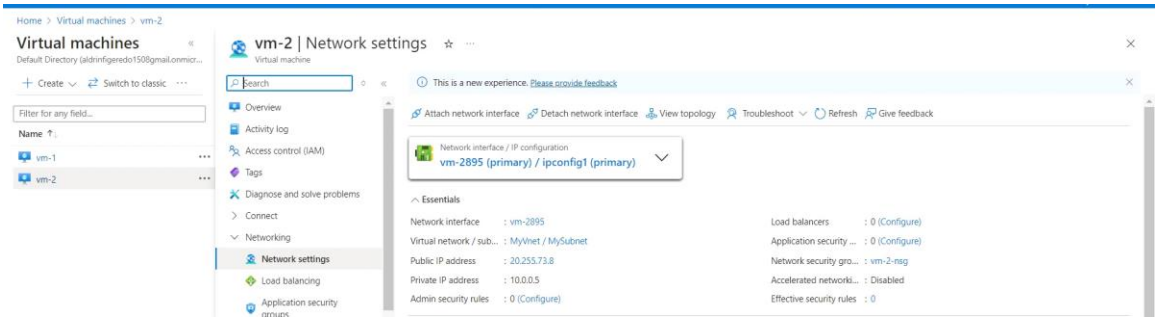
10.0.0.0 - 10.0.255.255 65,536 addresses

+ Add a subnet

Subnets	IP address range	Size	NAT gateway
MySubnet	10.0.0.0 - 10.0.0.255	/24 (256 addresses)	-

Previous Next **Review + create**





2. Change index.html to include the following text

a. “This is VM1” on VM1

b. “This is VM2” on VM2

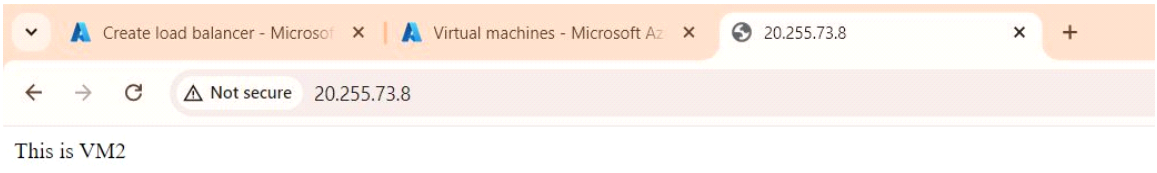
Jungkook@vm-2: ~

```
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/pro

 System information as of Sat Sep  7 15:08:12 UTC 2024

  System load:  0.15              Processes:             110
  Usage of /:   5.1% of 28.02GB   Users logged in:       0
  Memory usage: 44%               IPv4 address for eth0: 10.0.0.5
  Swap usage:   0%

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status



The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

Jungkook@vm-2:~$
```

```
Jungkook@vm-2:~$ sudo apt-get update
```

```
Reading package lists... Done
Jungkook@vm-2:~$ sudo apt-get install apache2 -y
Reading package lists... Done
```

```
No VM guests are running outdated hypervisor (qemu) binaries on this host.
Jungkook@vm-2:~$ cd /var/www/html/
Jungkook@vm-2:/var/www/html$ ls
index.html
Jungkook@vm-2:/var/www/html$ sudo rm index.html
Jungkook@vm-2:/var/www/html$ sudo nano index.html
Jungkook@vm-2:/var/www/html$ Jungkook@vm-2:/var/www/html$ cat index.html
This is VM1
Jungkook@vm-2:/var/www/html$ sudo nano index.html
Jungkook@vm-2:/var/www/html$ sudo cat index.html
This is VM2
Jungkook@vm-2:/var/www/html$
```



This is VM2

Jungkook@vm-1: ~

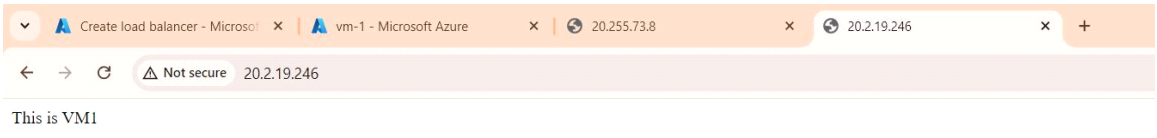
```
Microsoft Windows [Version 10.0.19045.4780]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Suttu>ssh Jungkook@20.2.19.246
The authenticity of host '20.2.19.246 (20.2.19.246)' can't be established.
ECDSA key fingerprint is SHA256:o9r67NKUJGzY1Vpgk8Hfdl8flcuWSWkt/O75i0IILnA.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '20.2.19.246' (ECDSA) to the list of known hosts.
Jungkook@20.2.19.246's password:
Welcome to Ubuntu 24.04.1 LTS (GNU/Linux 6.8.0-1013-azure x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/pro

 System information as of Sat Sep  7 15:15:00 UTC 2024

  System load:  0.08              Processes:             108
  Usage of /:   5.0% of 28.02GB   Users logged in:       0
  Memory usage: 29%               IPv4 address for eth0: 10.0.0.4
  Swap usage:   0%

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status



The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

Jungkook@vm-1:~$
```

Jungkook@vm-1: ~

```
Jungkook@vm-1:~$ sudo apt-get update
Hit:1 http://azure.archive.ubuntu.com/ubuntu n
```

```
Jungkook@vm-1:~$ sudo apt-get install apache2 -y
```

```
No VM guests are running outdated hypervisor (qemu) binaries on this host.
Jungkook@vm-1:~$ cd /var/www/html/
Jungkook@vm-1:/var/www/html$ ls
index.html
Jungkook@vm-1:/var/www/html$ sudo rm index.html
Jungkook@vm-1:/var/www/html$ sudo nano index.html
Jungkook@vm-1:/var/www/html$ sudo cat index.html
This is VM1
Jungkook@vm-1:/var/www/html$
```



This is VM1

3. Create a load balancer which will balance the traffic between these two VMs

Home > Load balancing | Load Balancer >

Create load balancer ...

Basics | Frontend IP configuration | Backend pools | Inbound rules | Outbound rules | Tags | Review + create

Azure load balancer is a layer 4 load balancer that distributes incoming traffic among healthy virtual machine instances. Load balancers uses a hash-based distribution algorithm. By default, it uses a 5-tuple (source IP, source port, destination IP, destination port, protocol type) hash to map traffic to available servers. Load balancers can either be internet-facing where it is accessible via public IP addresses, or internal where it is only accessible from a virtual network. Azure load balancers also support Network Address Translation (NAT) to route traffic between public and private IP addresses. Learn more.

Project details

Subscription * : Free Trial

Resource group * : Module7

Create new

Instance details

Name * : MyLoadBalancer

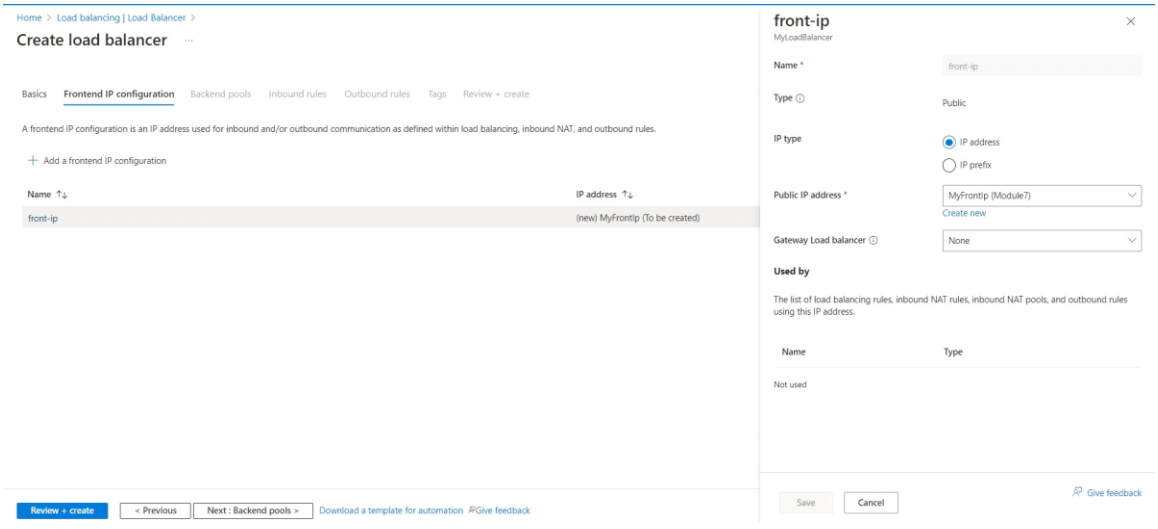
Region * : East Asia

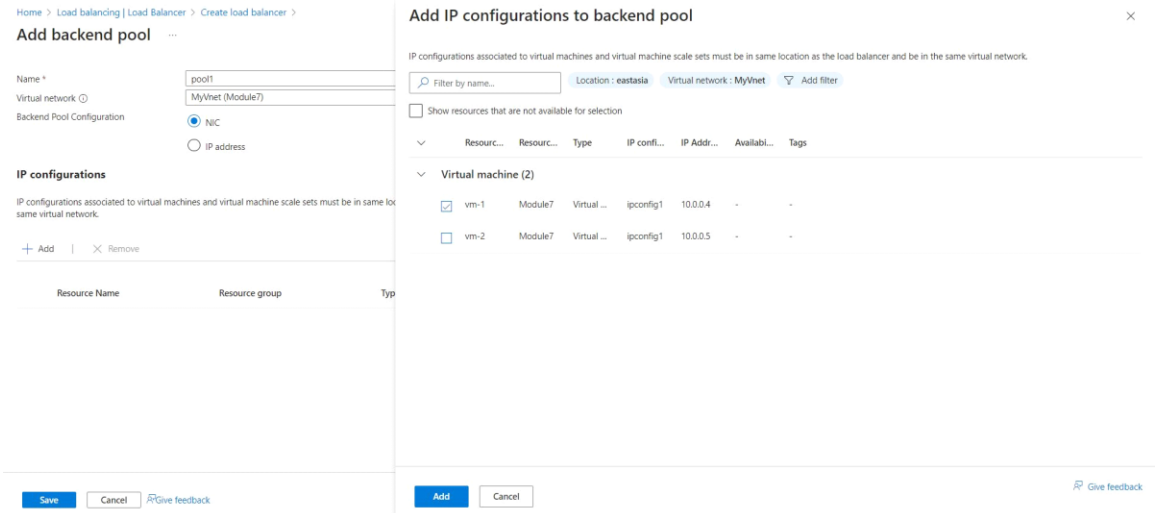
SKU * : (•) Standard (Recommended) ( ) Gateway ( ) Basic (Retiring soon)

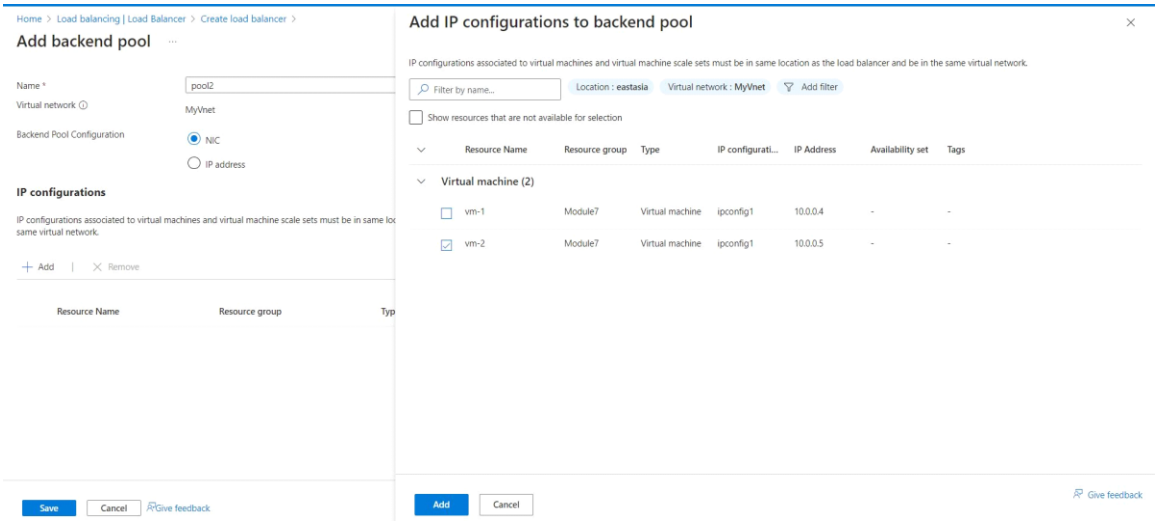
Type * : (•) Public ( ) Internal

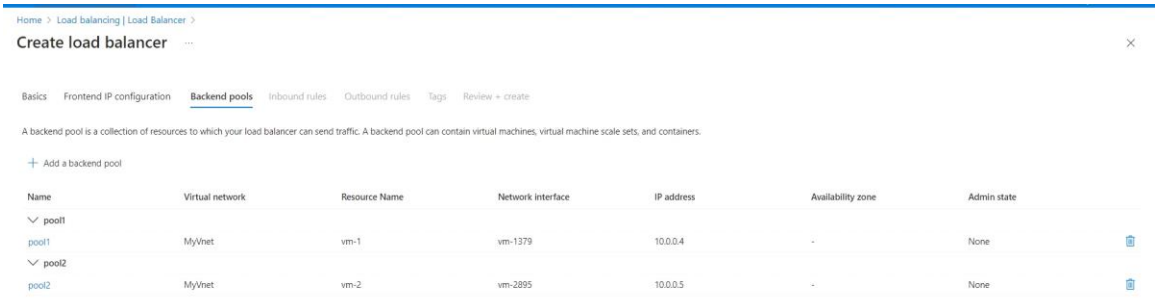
Tier * : (•) Regional ( ) Global

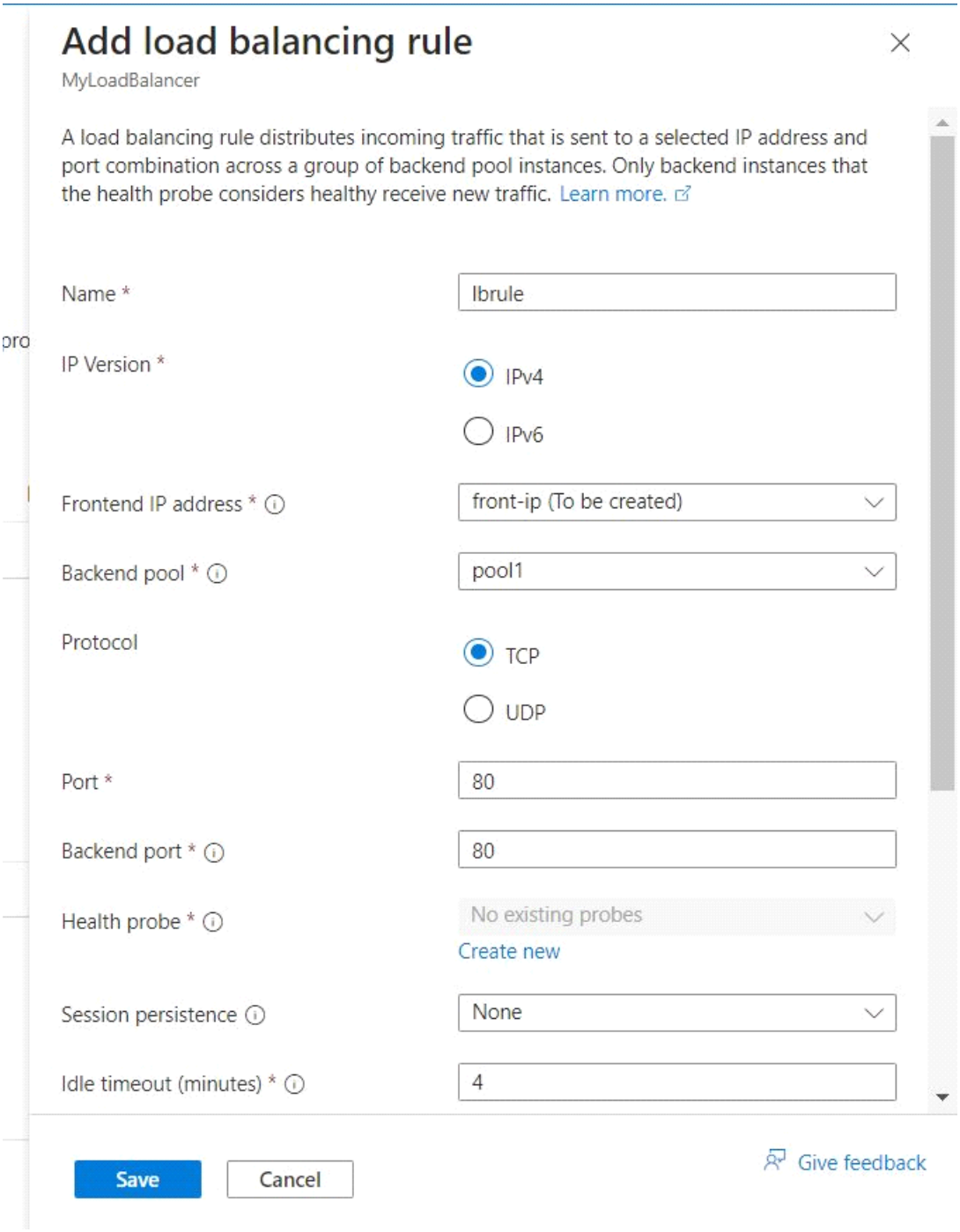
Review + create | < Previous | Next : Frontend IP configuration > | Download a template for automation | Give feedback

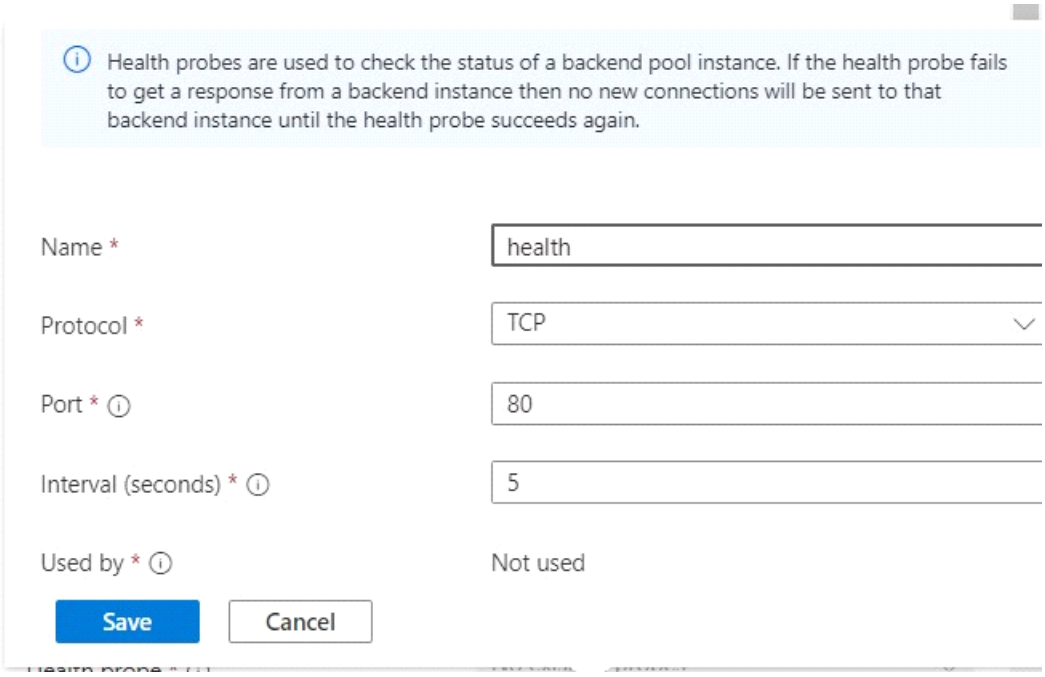


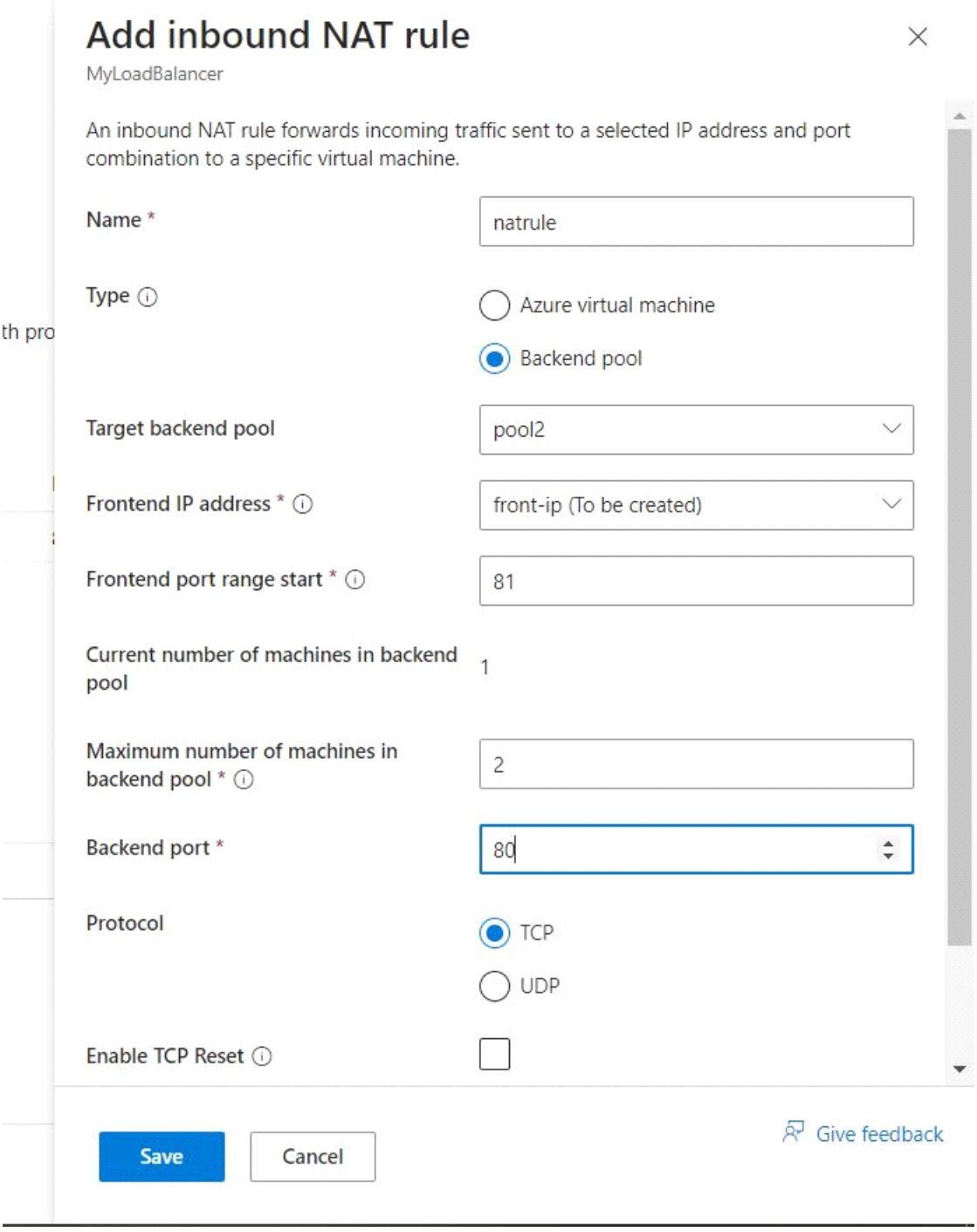

Home > Load balancing | Load Balancer > Create load balancer >
Add backend pool
Name *
pool1
Virtual network
MyVnet (Module7)
Backend Pool Configuration
NIC
IP address
IP configurations
IP configurations associated to virtual machines and virtual machine scale sets must be in same loc
same virtual network.
Add
Remove
Resource Name
Resource group
Typ
Save
Cancel
Give feedback
Add IP configurations to backend pool
IP configurations associated to virtual machines and virtual machine scale sets must be in same location as the load balancer and be in the same virtual network.
Filter by name...
Location : eastasia
Virtual network : MyVnet
Add filter
Show resources that are not available for selection
Resourc...
Resourc...
Type
IP confi...
IP Addr...
Availabi...
Tags
Virtual machine (2)
vm-1 Module7 Virtual ... ipconfig1 10.0.0.4 - -
vm-2 Module7 Virtual ... ipconfig1 10.0.0.5 - -
Add
Cancel
Give feedback

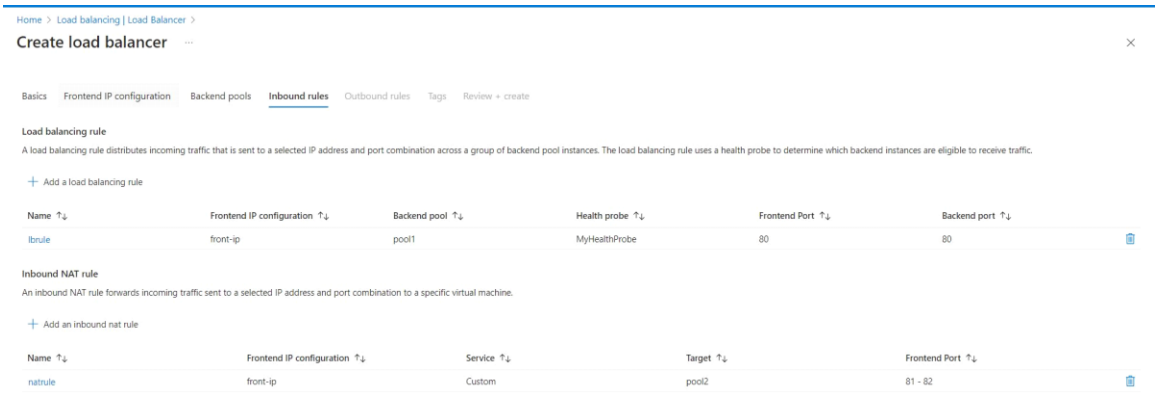

Home > Load balancing | Load Balancer > Create load balancer >
Add backend pool
Name *
pool2
Virtual network
MyVnet
Backend Pool Configuration
NIC
IP address
IP configurations
IP configurations associated to virtual machines and virtual machine scale sets must be in same loc
same virtual network.
Add
Remove
Resource Name
Resource group
Typ
Save
Cancel
Give feedback
Add IP configurations to backend pool
IP configurations associated to virtual machines and virtual machine scale sets must be in same location as the load balancer and be in the same virtual network.
Filter by name...
Location : eastasia
Virtual network : MyVnet
Add filter
Show resources that are not available for selection
Resource Name
Resource group
Type
IP configurati...
IP Address
Availability set
Tags
Virtual machine (2)
vm-1 Module7 Virtual machine ipconfig1 10.0.0.4 - -
vm-2 Module7 Virtual machine ipconfig1 10.0.0.5 - -
Add
Cancel
Give feedback

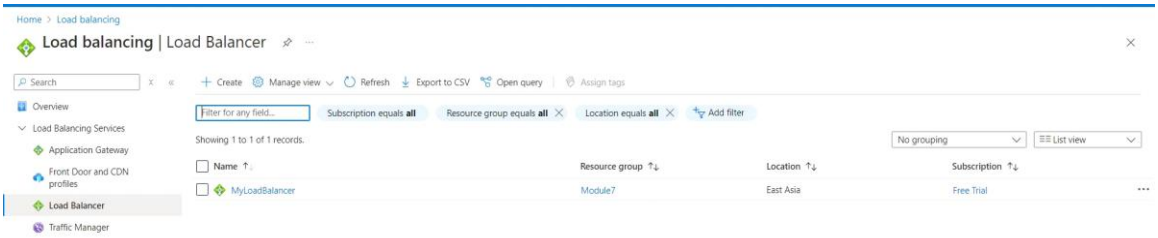

Home > Load balancing | Load Balancer >
Create load balancer
Basics
Frontend IP configuration
Backend pools
Inbound rules
Outbound rules
Tags
Review + create
A backend pool is a collection of resources to which your load balancer can send traffic. A backend pool can contain virtual machines, virtual machine scale sets, and containers.
Add a backend pool
Name
Virtual network
Resource Name
Network interface
IP address
Availability zone
Admin state
pool1
pool1 MyVnet vm-1 vm-1379 10.0.0.4 - None
pool2
pool2 MyVnet vm-2 vm-2895 10.0.0.5 - None

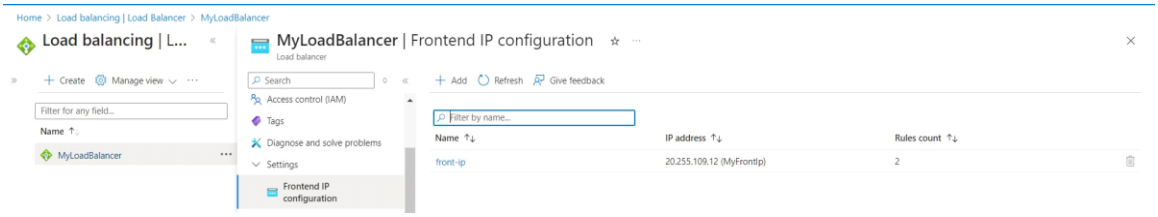

Add load balancing rule
MyLoadBalancer
A load balancing rule distributes incoming traffic that is sent to a selected IP address and port combination across a group of backend pool instances. Only backend instances that the health probe considers healthy receive new traffic. Learn more.
Name *
lbrule
IP Version *
IPv4
IPv6
Frontend IP address *
front-ip (To be created)
Backend pool *
pool1
Protocol
TCP
UDP
Port *
80
Backend port *
80
Health probe *
No existing probes
Create new
Session persistence
None
Idle timeout (minutes) *
4
Save
Cancel
Give feedback

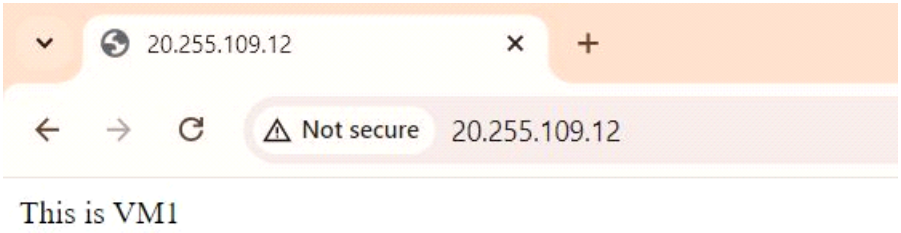

Health probes are used to check the status of a backend pool instance. If the health probe fails to get a response from a backend instance then no new connections will be sent to that backend instance until the health probe succeeds again.
Name *
health
Protocol *
TCP
Port *
80
Interval (seconds) *
5
Used by *
Not used
Save
Cancel


Add inbound NAT rule
MyLoadBalancer
An inbound NAT rule forwards incoming traffic sent to a selected IP address and port combination to a specific virtual machine.
Name *
natrule
Type
Azure virtual machine
Backend pool
Target backend pool
pool2
Frontend IP address *
front-ip (To be created)
Frontend port range start *
81
Current number of machines in backend pool
1
Maximum number of machines in backend pool *
2
Backend port *
80
Protocol
TCP
UDP
Enable TCP Reset
Save
Cancel
Give feedback


Home > Load balancing | Load Balancer >
Create load balancer
Basics
Frontend IP configuration
Backend pools
Inbound rules
Outbound rules
Tags
Review + create
Load balancing rule
A load balancing rule distributes incoming traffic that is sent to a selected IP address and port combination across a group of backend pool instances. The load balancing rule uses a health probe to determine which backend instances are eligible to receive traffic.
Add a load balancing rule
Name
Frontend IP configuration
Backend pool
Health probe
Frontend Port
Backend port
lbrule
front-ip
pool1
MyHealthProbe
80
80
Inbound NAT rule
An inbound NAT rule forwards incoming traffic sent to a selected IP address and port combination to a specific virtual machine.
Add an inbound nat rule
Name
Frontend IP configuration
Service
Target
Frontend Port
natrule
front-ip
Custom
pool2
81 - 82


Home > Load balancing
Load balancing | Load Balancer
Search
Create
Manage view
Refresh
Export to CSV
Open query
Assign tags
Overview
Load Balancing Services
Application Gateway
Front Door and CDN profiles
Load Balancer
Traffic Manager
Filter for any field...
Subscription equals all
Resource group equals all
Location equals all
Add filter
Showing 1 to 1 of 1 records.
No grouping
List view
Name
Resource group
Location
Subscription
MyLoadBalancer
Module7
East Asia
Free Trial


Home > Load balancing | Load Balancer > MyLoadBalancer
Load balancing | L...
MyLoadBalancer | Frontend IP configuration
Load balancer
Create
Manage view
Filter for any field...
Name
MyLoadBalancer
Search
Access control (IAM)
Tags
Diagnose and solve problems
Settings
Frontend IP configuration
Add
Refresh
Give feedback
Filter by name...
Name
IP address
Rules count
front-ip
20.255.109.12 (MyFrontIp)
2


20.255.109.12
Not secure
20.255.109.12

This is VM1