



Module 7: Hands-On: Creating an Internal Load Balancer

Step 1: Create three Windows Virtual Machines (VM1, VM2, Internal VM) with same resource groups, region and VM configuration that is Windows 2019 datacenter Gen2, having the size of 2 vCPU and 16 GiB and all should be present in Availability set.

Home > Virtual machines >

Create a virtual machine

⚠ Changing Basic options may reset selections you have made. Review all options prior to creating the virtual machine.

Instance details

Virtual machine name * VM1

Region * (US) East US

Availability options Availability set

Based on your input, you might want to consider creating this resource as a virtual machine scale set, which allows you to manage, configure and scale load balanced virtual machines. [Create as VMSS](#)

Availability set * (new) set1
Create new

Security type Standard

Image * Windows Server 2019 Datacenter - x64 Gen2

Review + create < Previous Next: Disks >

Give feedback

Step 2: All the three VMs should be present in same VNet

Microsoft Azure Search resources, services, and docs (0-0)

Home > Virtual machines >

Create a virtual machine

Basics Disks Networking Management Monitoring Advanced Tags Review + create

Define network connectivity for your virtual machine by configuring network interface card (NIC) settings. You can control ports, inbound and outbound connectivity with security group rules, or place behind an existing load balancing solution. [Learn more](#)

Network interface

When creating a virtual machine, a network interface will be created for you.

Virtual network * vnet-az
Create new

Subnet * default (10.0.0/24)
Manage subnet configuration

Public IP * (new) VM11p490
Create new

NIC network security group *
☐ None
☒ Basic
☐ Advanced

Public inbound ports *
☐ None
☒ Allow selected ports

Select inbound ports * HTTP (80), HTTPS (443), RDP (3389)

⚠ This will allow all IP addresses to access your virtual machine. This is only recommended for development. For production, it is recommended to use a security group rule to restrict access to specific IP addresses.

Review + create < Previous Next: Management >

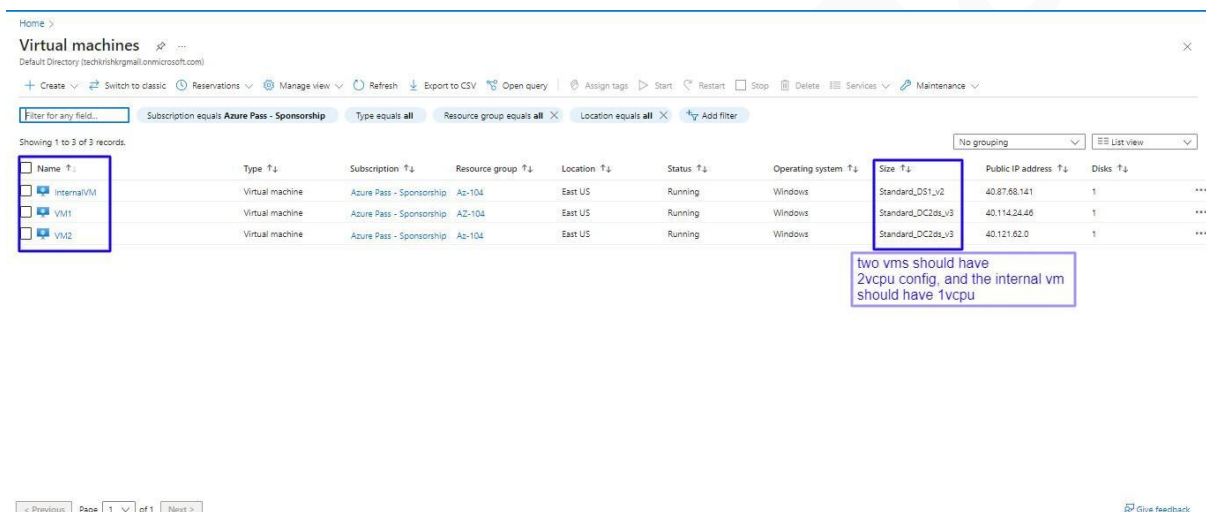
Give feedback

Step 3: After the creation of all three VMs, launch both the VMs named VM1 and VM2 and install IIS web server in it.

The third VM i.e. InternalVM will be used further to check if our Load Balancer is working or not.

Here, as you can see, three VMs are created . Two VMs with configuration of 2 vCPU and 16 GiB memory and one VM named as Internal VM is 1 vCPU and 1 GiB memory.

Note: It is done so because the Availability set can only have 5 vCPUs running in a Free Trial Subscription.



Virtual machines

Default Directory (technishkingmail@microsoft.com)

Filter for any field... Subscription equals Azure Pass - Sponsorship Type equals all Resource group equals all Location equals all Add filter

Showing 1 to 3 of 3 records.

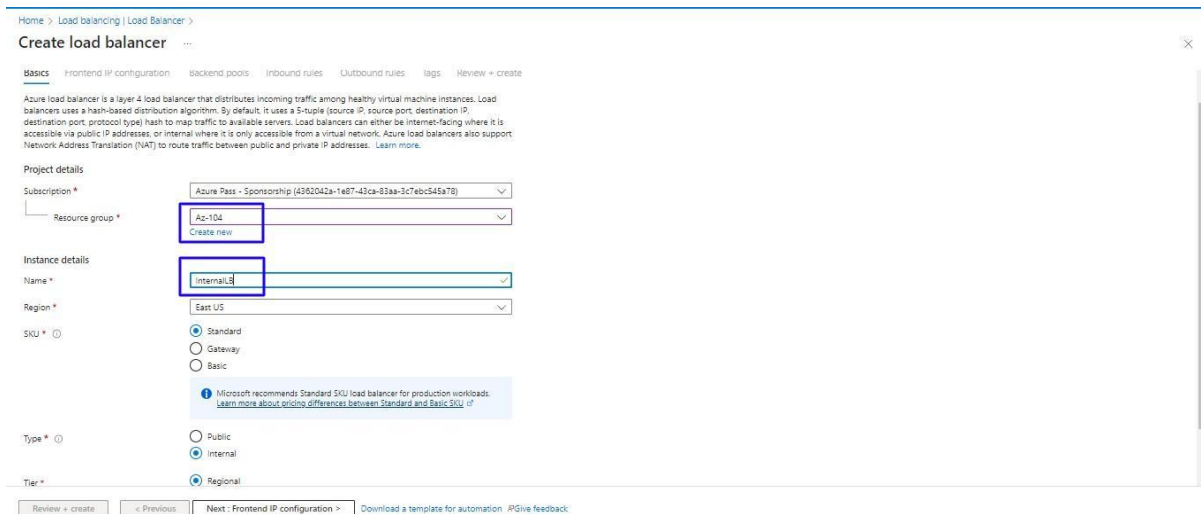
| Name | Type | Subscription | Resource group | Location | Status | Operating system | Size | Public IP address | Disks |
|------------|-----------------|--------------------------|----------------|----------|---------|------------------|-------------------|-------------------|-------|
| InternalVM | Virtual machine | Azure Pass - Sponsorship | Az-104 | East US | Running | Windows | Standard_DS1_v2 | 40.87.68.141 | 1 *** |
| VM1 | Virtual machine | Azure Pass - Sponsorship | AZ-104 | East US | Running | Windows | Standard_DC2ds_v3 | 40.114.24.46 | 1 *** |
| VM2 | Virtual machine | Azure Pass - Sponsorship | Az-104 | East US | Running | Windows | Standard_DC2ds_v3 | 40.121.62.0 | 1 *** |

two vms should have 2vcpu config, and the internal vm should have 1vcpu

< Previous Page 1 of 1 Next >

Give feedback

Step 4: After the creation of three Windows VMs, deploy a load balancer
Deploy the load balancer with same resource groups, same region, same VNet



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 * Azure Pass - Sponsorship (43602042a-1e87-43ca-83aa-3c7ebc545a78) ✓

Resource group * Az-104 ✓
[Create new](#)

Instance details

Name * InternalLB ✓

Region * East US ✓

SKU * ☒ Standard
☐ Gateway
☐ Basic

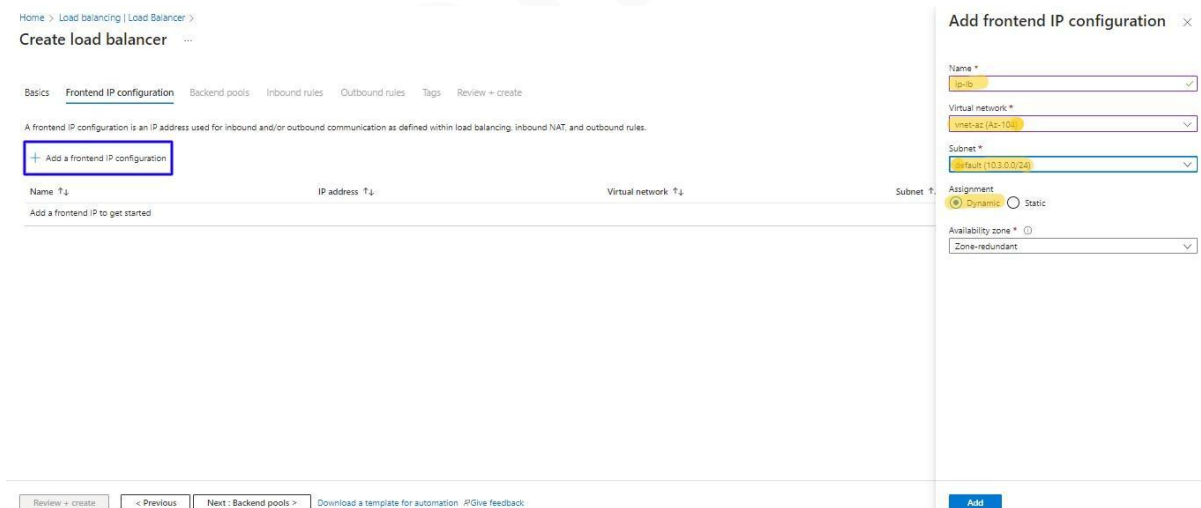
Microsoft recommends Standard SKU load balancer for production workloads. [Learn more about pricing differences between Standard and Basic SKU.](#)

Type * ☒ Internal
☐ Public

Tier * ☒ Regional

[Review > create](#) [< Previous](#) [Next > Frontend IP configuration](#) [Download a template for automation](#) [Provide feedback](#)

Step 5: Now, configure the frontend IP configuration. Give a name to the IP, select the VNet and Subnet



Home > Load balancing | Load Balancer >

Create load balancer

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

A frontend IP configuration is an IP address used for inbound and/or outbound communication as defined within load balancing, inbound NAT, and outbound rules.

[+ Add a frontend IP configuration](#)

| Name | IP address | Virtual network | Subnet |
|----------------------------------|------------|-----------------|--------|
| Add a frontend IP to get started | | | |

[Review > create](#) [< Previous](#) [Next > Backend pools](#) [Download a template for automation](#) [Provide feedback](#)

Add frontend IP configuration

Name * ip-lb ✓

Virtual network * vnet-az (Az-104) ✓

Subnet * default (10.3.0.0/24) ✓

Assignment ☒ Dynamic ☐ Static

Availability zone * Zone-redundant ✓

[Add](#)

Step 6: Next we will configure the backend pools for the VMs

Home > Load balancing | Load Balancer > Create load balancer >

Add backend pool

1. Name* pool1

Virtual network vnet-az

Backend Pool Configuration

2. NIC

IP configurations

3. Add

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 : eastus Virtual network : vnet-az Add filter

Show resources that are not available for selection

| | Resource Name | Resource group | Type | IP configuration | IP Address | Availability set | Tags |
|--|---------------|----------------|-----------------|------------------|------------|------------------|------|
| Virtual machine (3) | | | | | | | |
| 4. <input checked="" type="checkbox"/> | Internal/VM | Az-104 | Virtual machine | ipconfig1 | 10.3.0.8 | SET1 | - |
| <input checked="" type="checkbox"/> | VM1 | Az-104 | Virtual machine | ipconfig1 | 10.3.0.6 | SET1 | - |
| <input type="checkbox"/> | VM2 | Az-104 | Virtual machine | ipconfig1 | 10.3.0.7 | SET1 | - |

5. Add Cancel Give feedback

As there are two VMs, therefore, we need to add two pools in the same way we did for pool1.

Home > Load balancing | Load Balancer >

Create load balancer

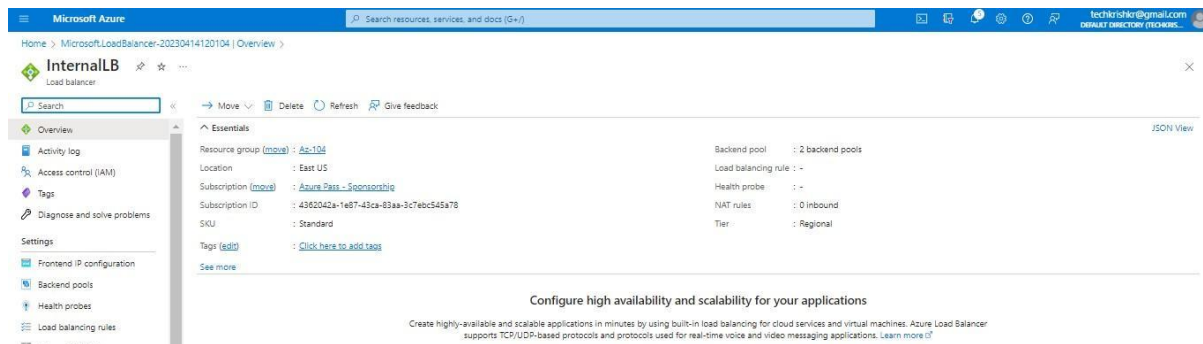
Basics Frontend IP configuration Backend pools Inbound rules Outbound rules Tags Review + create

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.

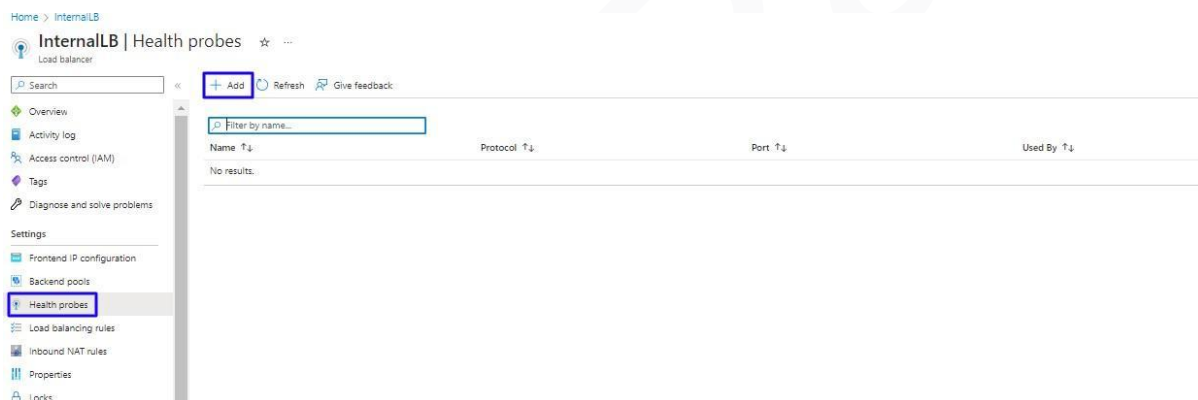
+ Add a backend pool

| Name | Virtual network | Resource Name | Network interface | IP address | Availability zone |
|-------|-----------------|---------------|-------------------|------------|-------------------|
| pool1 | vnet-az | VM1 | vm1560 | 10.3.0.6 | - |
| pool2 | vnet-az | VM2 | vm2135 | 10.3.0.7 | - |

The load balancer is created.



Step 7: After creating the load balancer, you have to add a Health Probe to it



Configure Health Probe and then click on Add

Home > InternalLB | Health probes >

Add health probe ...

InternalLB

i 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 * | <input type="text" value="health"/> |
| Protocol * | <input type="text" value="TCP"/> |
| Port * | <input type="text" value="80"/> |
| Interval * | <input type="text" value="5"/> seconds |
| Used by * | Not used |

[Add](#) [Give feedback](#)

Step 8: Now we have to add load balancing rules

Home > InternalLB

InternalLB | Load balancing rules ☆

Load balancer

| | |
|---------------------------|---|
| Search | Add Refresh Give feedback |
| Filter by name... | |
| Add a rule to get started | |

Settings

Frontend IP configuration

Backend pools

Health probes

Load balancing rules

Inbound NAT rules

Properties

Locks

Enter the details for LB, after that click on Save

[Home](#) > [InternalLB | Load balancing rules](#) >

Add load balancing rule ...

InternalLB

① 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.

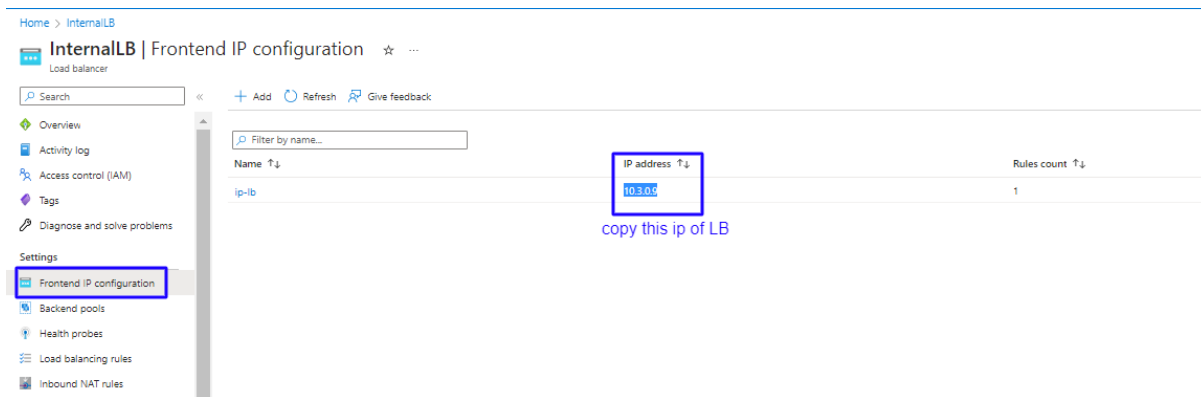
| | |
|----------------------------|---|
| Name * | <input type="text" value="LBRule"/> |
| IP Version * | <input checked="" type="radio"/> IPv4 <input type="radio"/> IPv6 |
| Frontend IP address * ① | <input type="text" value="ip-lb (10.3.0.9)"/> |
| Backend pool * ① | <input type="text" value="pool1"/> |
| HA Ports ① | <input type="checkbox"/> |
| Protocol | <input checked="" type="radio"/> TCP <input type="radio"/> UDP |
| Port * | <input type="text" value="80"/> |
| Backend port * ① | <input type="text" value="80"/> |
| Health probe * ① | <input type="text" value="health (TCP:80)"/> |
| Session persistence ① | <input type="text" value="None"/> |
| Idle timeout (minutes) * ① | <input type="text" value="4"/> |
| Enable TCP Reset | <input type="checkbox"/> |
| Enable Floating IP ① | <input type="checkbox"/> |

Save

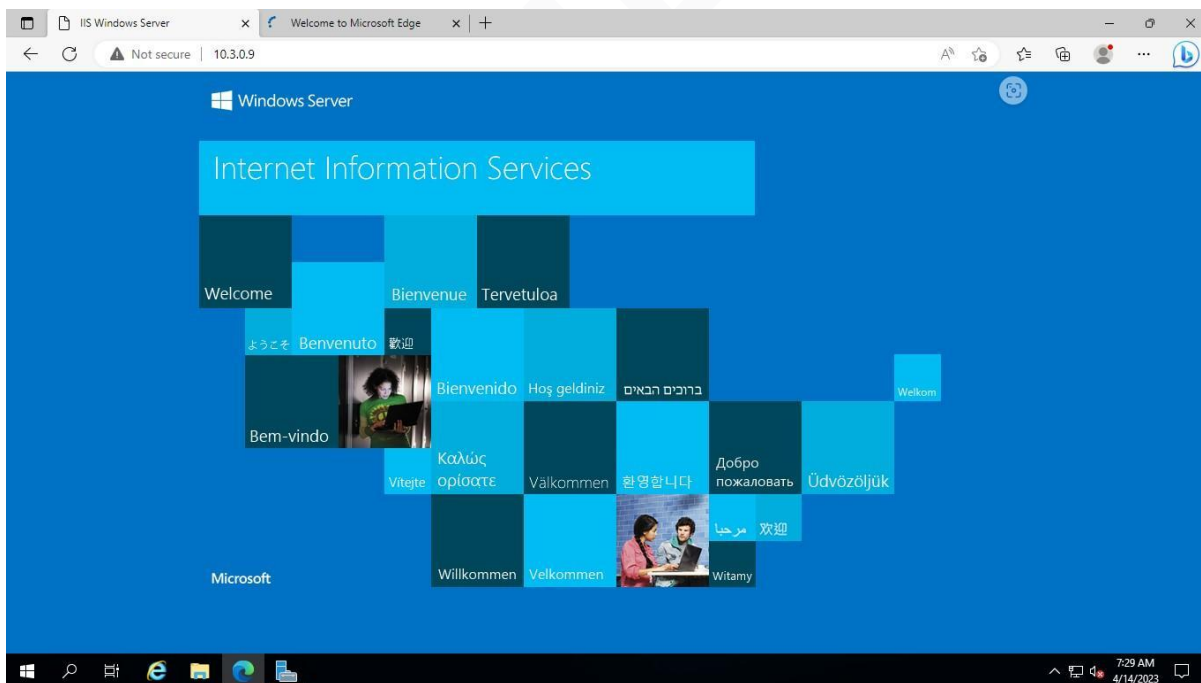
Cancel

 Give feedback

Step 9: Now search for Frontend IP configurations on the left side of panel and copy the IP address of the load balancer



Step 10: After copying it, paste it in the Internal VM (also called testing VM) to check if the LB is working or not. Paste the IP address here in the browser of Testing VM i.e., the third VM named as InternalVm



And here you can see the IIS page is displaying which indicates that the load balancer is working properly.