

DVS Technologies

Dvs Technologies Azure administration

Compiled and Scrutinized by
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Words To The Students

Though we have taken utmost efforts to present you this book error free, but still it may contain some errors or mistakes. Students are encouraged to bring, if there are any mistakes or errors in this document to our notice. So that it may be rectified in the next edition of this document.

“Suppressing your doubts is Hindering your growth”.

We urge you to work hard and make use of the facilities we are providing to you, because there is no substitute for hard work. We wish you all the best for your future.

“The grass isn’t greener on the other side; the grass is greener where you water it.”

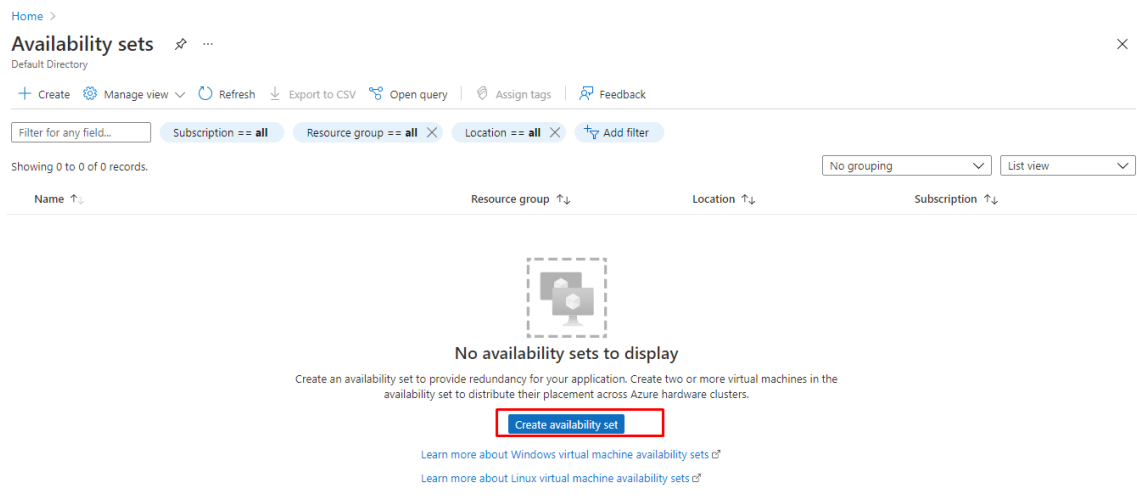
You and your suggestions are valuable to us; Help us to serve you better. In case of any suggestions, grievance, or complaints, please feel free to write us your suggestions, grievance and feedback on the following

Dvs.training@gmail.com

1 Intro for Infra availability

Explain in detail about
Server
Rack
Infra building
Datacenter
Availability zones
Regions
Geography

2 Availability Sets



Home > Availability sets ✕ ...

Default Directory


+ Create Manage view Refresh Export to CSV Open query Assign tags Feedback

Filter for any field... Subscription == all Resource group == all Location == all Add filter

Showing 0 to 0 of 0 records.

No grouping List view

Name Resource group Location Subscription



No availability sets to display

Create an availability set to provide redundancy for your application. Create two or more virtual machines in the availability set to distribute their placement across Azure hardware clusters.

[Create availability set](#)

[Learn more about Windows virtual machine availability sets](#)

[Learn more about Linux virtual machine availability sets](#)

Create availability set

makes sure that the VMs you place within an availability set run across multiple physical servers, compute racks, storage units, and network switches. If a hardware or software failure happens, only a subset of your VMs are impacted and your overall solution stays operational. Availability Sets are essential for building reliable cloud solutions. [Learn more about availability sets.](#)

Project details

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

Subscription * ⓘ

Resource group * ⓘ [Create new](#)

Instance details

Name * ⓘ

Region * ⓘ

Fault domains ⓘ

Update domains ⓘ

Use managed disks ⓘ ☐ ☒

[Review + create](#)

< Previous

Next : Advanced >

Microsoft Azure

Home > Availability sets >

dvs-avset

Overview

Activity log

Access control (IAM)

Tags

Settings

Configuration

Virtual machines

Properties

Locks

Automation

Tasks (preview)

Export template

Support + troubleshooting

New Support Request

Essentials

Resource group (move) : dvs-rg

Location : East US

Subscription (move) : Pay-As-You-Go

Subscription ID : 698c0447-bb32-4449-bce8-002d5b9938c9

Fault domains : 2

Update domains : 5

Virtual machines : 0

Managed : Yes

Colocation status : N/A

Search virtual machines

Name	Status	Colocation status	Fault Domain	Update Domain
No results.				

Now let's create three servers and check the availability set allocation along with fault & update domains.

Note: Once VM got created you cannot assign it to availability set

Microsoft Azure

Home > Virtual machines >

Create a virtual machine

Resource group *

Instance details

Virtual machine name *

Region *

Availability options

Availability set *

Security type

Image *

Azure Spot instance ☐

Size *

Administrator account

[Review + create](#) [< Previous](#) [Next: Disks >](#)

Please create two more servers like above

Checking for the availability set allocations:

From server side:

Microsoft Azure

Home > Virtual machines >

server1-avset

Virtual machine

Search (Ctrl+F)

Connect Start Restart Stop Capture Delete Refresh Open in mobile CLI / PS Feedback

Essentials

Resource group (move) : [dvs-rg](#)

Status : Running

Location : East US

Subscription (move) : [Pay-As-You-Go](#)

Subscription ID : 69fc0447-bb32-4449-bce8-002d5b9938c9

Tags (edit) : [Click here to add tags](#)

Operating system : Linux (centos 7.9.2009)

Size : Standard B1s (1 vcpu, 1 GiB memory)

Public IP address : [13.82.0.56](#)

Virtual network/subnet : [dvs-rg-vnet/default](#)

DNS name : [Not configured](#)

Properties Monitoring Capabilities (7) Recommendations Tutorials

Virtual machine

Computer name	server1-avset
Health state	-
Operating system	Linux (centos 7.9.2009)
Publisher	OpenLogic
Offer	CentOS
Plan	7_9-gen2
VM generation	V2
Agent status	Ready
Agent version	2.7.0.6

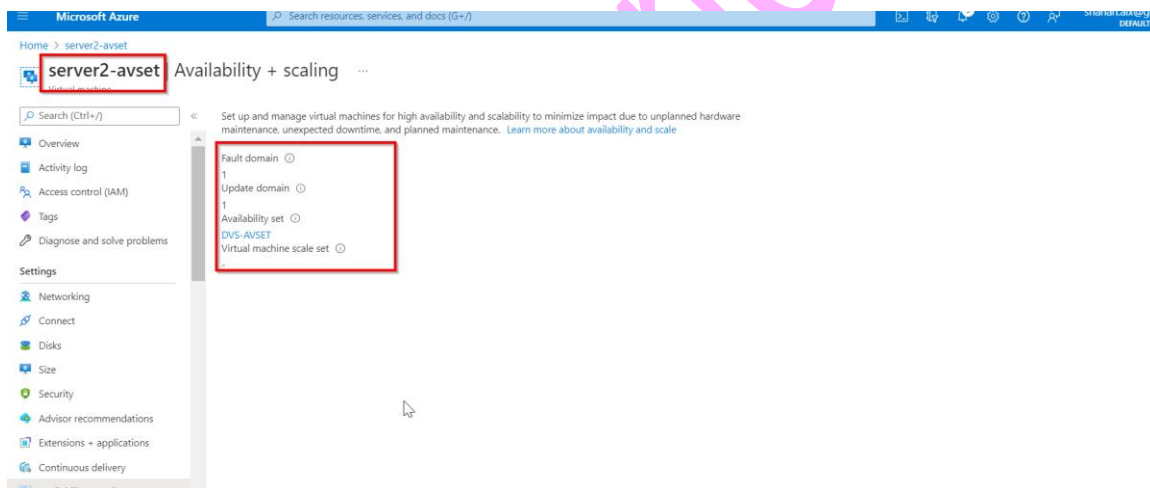
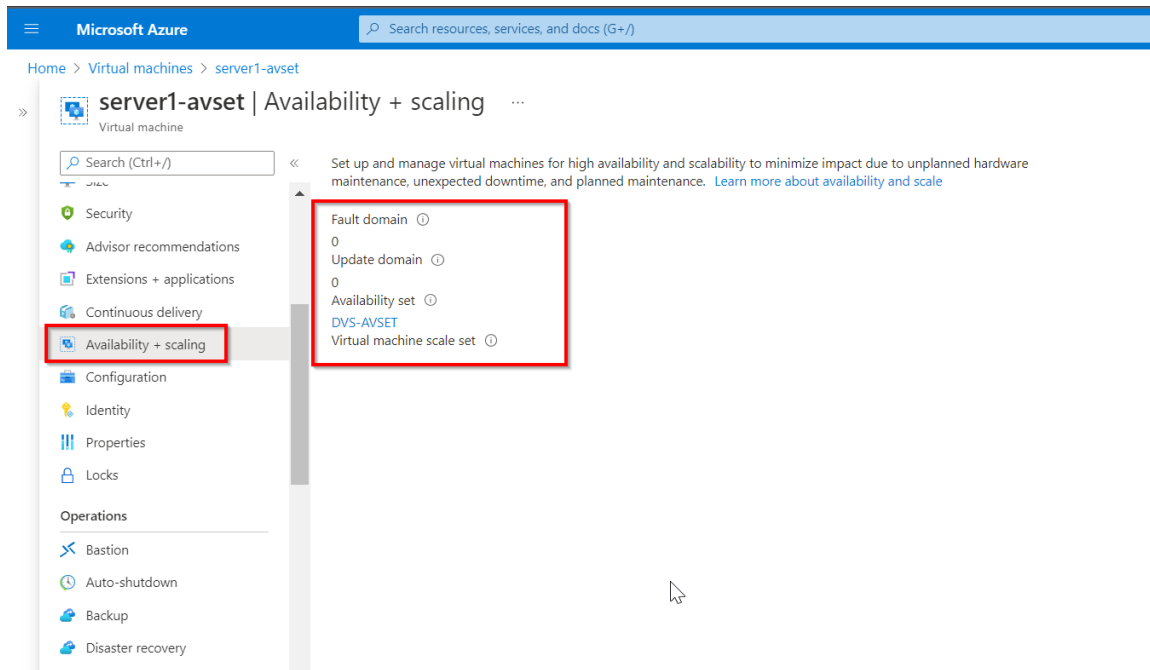
Networking

Public IP address	13.82.0.56
Public IP address (IPv6)	-
Private IP address	10.0.0.4
Private IP address (IPv6)	-
Virtual network/subnet	dvs-rg-vnet/default
DNS name	Configure

Size

Size	Standard B1s
vCPUs	1

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From AVSET:

Microsoft Azure

Search resources, services, and docs (G+)

shahan.ais@gmail.com

Home > Availability sets >

dvs-asset

Availability set

Search (Ctrl+F)

Delete Refresh

Overview

Activity log

Access control (IAM)

Tags

Settings

Configuration

Virtual machines

Properties

Locks

Automation

Tasks (preview)

Export template

Support + troubleshooting

New Support Request

Essentials

Resource group (move) : dvs-rg

Location : East US

Subscription (move) : Play-As-You-Go

Subscription ID : 69f0447-bb32-4449-bce8-002d5b9938c9

Fault domains : 2

Update domains : 5

Virtual machines : 3

Managed : Yes

Colocation status : N/A

JSON View

Search virtual machines

Name	Status	Colocation status	Fault Domain	Update Domain
server1-asset	Running		0	0
server2-asset	Running		1	1
server3-asset	Running		0	2

3 Availability zones

Create two servers with different availability zones when we go with AVZ then we no need to opt for availability sets.

Microsoft Azure

Home > Virtual machines >

Create a virtual machine

Instance details

Virtual machine name *

Region *

Availability options

Availability zone *

Security type

Image *

Azure Spot instance ☐

Size *

Administrator account

Authentication type ☐ SSH public key ☒ Password

Username *

[Review + create](#) [< Previous](#) [Next: Disks >](#)

Microsoft Azure

Home > Virtual machines >

Create a virtual machine

Instance details

Virtual machine name *

Region *

Availability options

Availability zone *

Security type

Image *

Azure Spot instance ☐

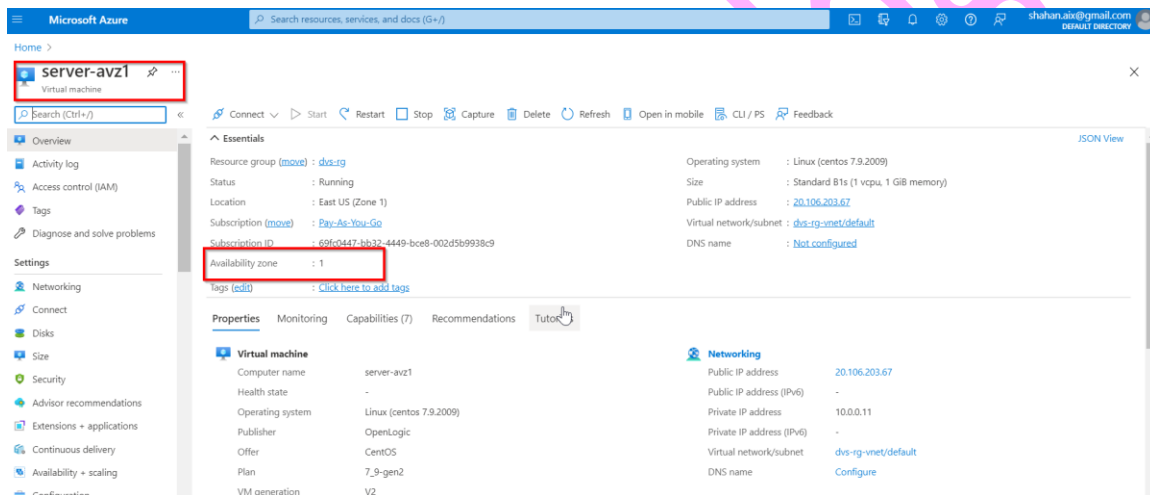
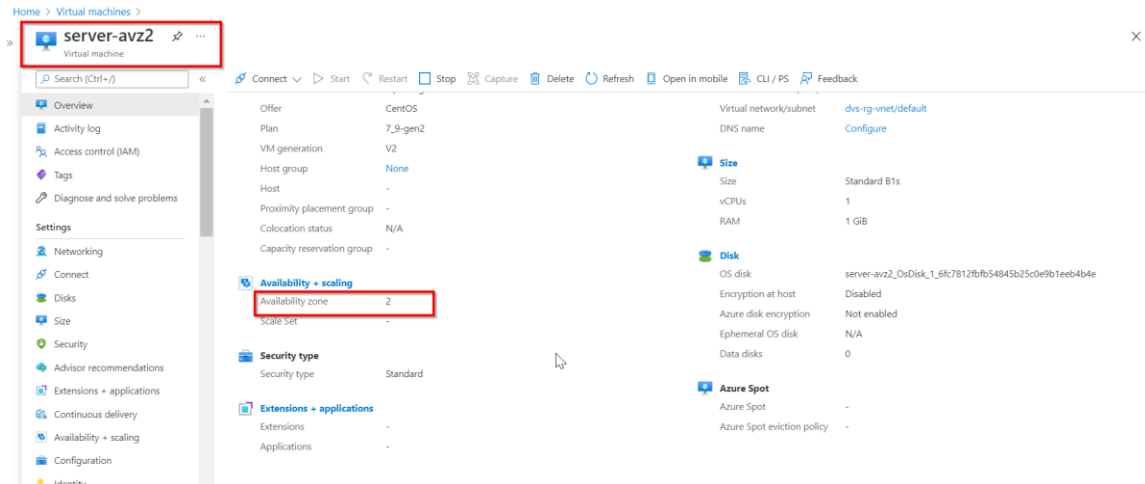
Size *

Administrator account

Authentication type ☐ SSH public key ☒ Password

Username *

[Review + create](#) [< Previous](#) [Next: Disks >](#)



From the above we see that we have two servers running two diff availability zones.

We do have some regions where we don't have availability zones in such cases azure provides 99.99% of server availability

For example:

Microsoft Azure

Home > Virtual machines > Create a virtual machine

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

Subscription: Pay-As-You-Go
Resource group: dvs-rg

Instance details

Virtual machine name:

Region: (Asia Pacific) South India

Availability options: No infrastructure redundancy required

Security type: No infrastructure redundancy required

Image:

Azure Spot instance: ☐

Virtual machine scale set: Distribute VMs across zones and fault domains at scale

Availability set: Automatically distribute your VMs across multiple fault domains.

Review + create

Here in India - south no need to worry about availability zone as we don't have that option for this region.

In such cases azure supports vm's with 99.99% of availability.

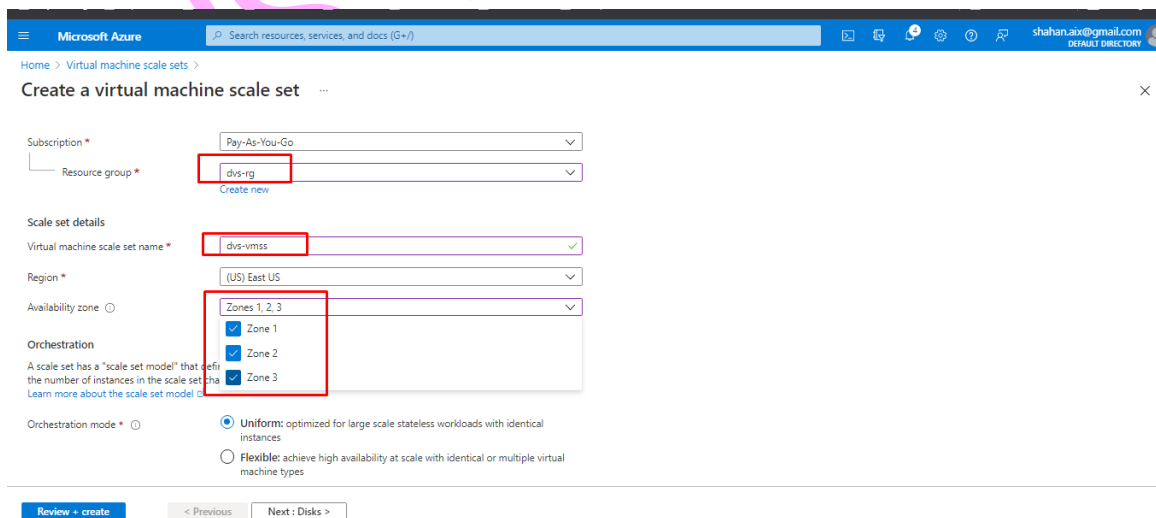
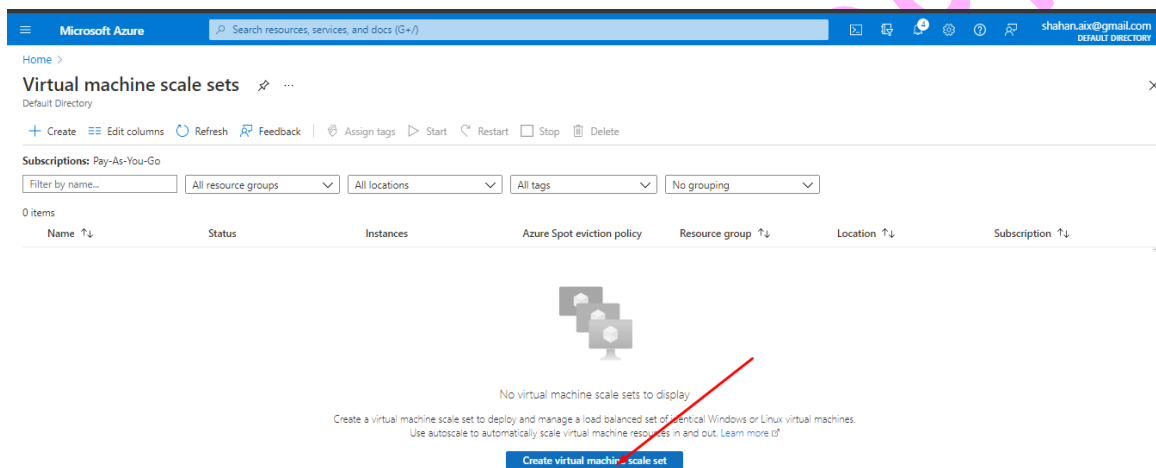
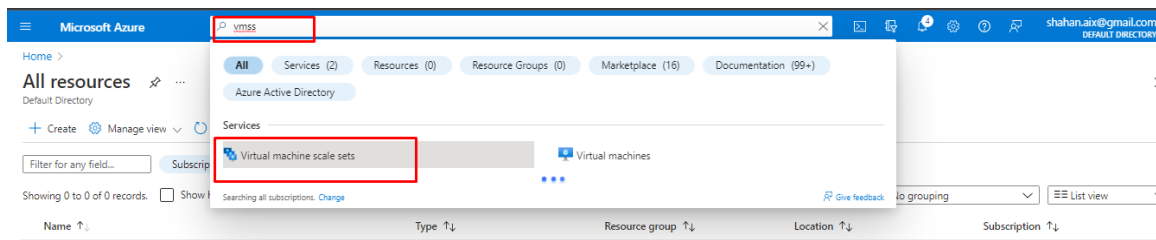
4 AZ Scale Sets

Azure virtual machine scale sets

- > This service allows you to create and manage a group of identical virtual machines.
- > You can also place the scale set behind a load balancer to distribute the traffic across the virtual machines.
- > The number of virtual machine instances automatically increases or decreases based on the demand on the virtual machine scale set.
- > The use of virtual machine scale sets helps provide better redundancy and improved performance for your applications.

Note: Scale set is nothing but the autos calling configuration in AWS

Let's configure the azure scale sets



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Microsoft Azure

Home > Virtual machine scale sets >

Create a virtual machine scale set

Security type: Standard

Instance details

Image: CentOS-based 7.9 - Gen2

Azure Spot instance: ☐

Size: Standard_B1s - 1 vcpu, 1 GiB memory (₹546.97/month)

Administrator account

Authentication type: ☒ Password ☐ SSH public key

Username: dvsadmin

Password: [REDACTED]

Confirm password: [REDACTED]

[Review + create](#) < Previous Next: Disks >

NOTE: DON'T FORGET TO SELECT THE BELOW TO ENABLE THE PUBLIC IP OTHERWISE YOU WILL NOT GET IPADDRESS

Microsoft Azure

Home > Virtual machine scale sets >

Create a virtual machine scale set

Basics **Networking** Scaling Management Health 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 about VMSS networking](#)

Virtual network configuration

Azure Virtual Network (VNet) enables many types of Azure resources to securely communicate with each other, the internet, and on-premises networks. [Learn more about VNets](#)

Virtual network: (New) dvsgvnet247 (recommended)

Network interface

A network interface enables an Azure virtual machine to communicate with internet, Azure, and on-premises resources. A VM can have one or more network interfaces.

+ Create new nic Delete

NAME	CREATE PUBLIC...	SUBNET	NETWORK SECU...	ACCELERATED N...
<input type="checkbox"/> dvsgvnet247-nic01	No	default (10.1.0.0/16)	Basic	Off

[Review + create](#) < Previous Next: Scaling >

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

Home > Virtual machine scale sets > Create a virtual machine scale set >

Edit network interface

☐ Private
☒ Basic
☐ Advanced

Public inbound ports *

☒ None
☐ Allow selected ports

Select inbound ports

Select one or more ports

All traffic from the Internet will be blocked by default. You will be able to change inbound port rules in the VM > Networking page.

Public IP address

☐ Disabled
☒ Enabled

Accelerated networking

☐ Disabled
☐ Enabled

OK Cancel

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

Home > Virtual machine scale sets >

Create a virtual machine scale set

Basics Disks Networking **Scaling** Management Health Advanced Tags Review + create

An Azure virtual machine scale set can automatically increase or decrease the number of VM instances that run your application. This automated and elastic behavior reduces the management overhead to monitor and optimize the performance of your application. [Learn more about VMSS scaling](#)

Initial instance count *

1

Scaling

Scaling policy

☐ Manual
☒ Custom

Minimum number of instances *

1

Maximum number of instances *

3

Scale out

CPU threshold (%) *

40

Duration in minutes *

5

Review + create < Previous Next: Management >

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

Home > Virtual machine scale sets >

Create a virtual machine scale set

CPU threshold (%) *

40

Duration in minutes *

5

Number of instances to increase by *

1

Scale in

CPU threshold (%) *

25

Number of instances to decrease by *

1

Diagnostic logs

Collect diagnostic logs from Autoscale

Scale-In policy

Configure the order in which virtual machines are selected for deletion during a scale-in operation. [Learn more about scale-in policies](#)

Scale-in policy

Default - Balance across availability zones and fault domains, then delete ...

Review + create < Previous Next: Management >

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

Home > Virtual machine scale sets >

Create a virtual machine scale set

Azure Security Center provides unified security management and advanced threat protection across hybrid cloud workloads. [Learn more](#)

✔ Your subscription is protected by Azure Security Center basic plan.

Upgrade policy

Upgrade mode ☐ Manual - Existing instances must be manually upgraded

Monitoring

Boot diagnostics ☐ ☒ Enable with managed storage account (recommended)
☐ Enable with custom storage account
☐ Disable

Identity

System assigned managed identity ☐

Azure AD

Login with Azure AD ☐

[Review + create](#) < Previous Next: Health >

```
#!/bin/bash
yum install httpd -y
systemctl enable httpd
echo "Hi Team welcome to VMSS" > /var/www/html/index.html
systemctl restart httpd
```

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

Home > Virtual machine scale sets >

Create a virtual machine scale set

Enable scaling beyond 100 instances ☒

Force strictly even balance across zones ☐

Spreading algorithm ☒ Max spreading
☐ Fixed spreading (not recommended with zones)

Custom data and cloud init

Pass a cloud-init script, configuration file, or other data into the virtual machine while it is being provisioned. The data will be saved on the VM in a known location. [Learn more about custom data for VMSS](#)

Custom data ☒

```
#!/bin/bash
yum install httpd -y
systemctl enable httpd
echo "Hi Team welcome to VMSS" > /var/www/html/index.html
systemctl restart httpd
```

Custom data on the selected image will be processed by cloud-init. [Learn more about custom data for VMSS](#)

[Review + create](#) < Previous Next: Tags >

Microsoft Azure

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

Home > Virtual machine scale sets >

Create a virtual machine scale set

Running final validation...

Basics Disks Networking Scaling Management Health Advanced Tags Review + create

Basics

Subscription	Pay-As-You-Go
Resource group	dvs-rg
Virtual machine scale set name	dvs-vmss
Region	East US
Orchestration mode	Uniform
Availability zone	1,2,3
Image	CentOS-based 7.9 - Gen2
Size	Standard B1s (1 vcpu, 1 GiB memory)
Security type	Standard
Authentication type	Password
Username	dvsadmin
Azure Spot	No

Create < Previous Next > Download a template for automation

Verifying VMSS:

Microsoft Azure

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

Home > CreateVmss-OpenLogic.CentOS-7.9-gen2-20220210212958 >

dvs-vmss1 Virtual machine scale set

Move Start Restart Stop Delete Refresh Feedback

Search (Ctrl+F)

Overview

- Activity log
- Access control (IAM)
- Tags
- Diagnose and solve problems
- Settings
- Instances**
- Networking
- Scaling
- Disks
- Operating system
- Security
- Guest + host updates
- Size
- Extensions
- Continuous delivery

Essentials

Resource group (move) : [dvs-rg](#)

Status : 1 out of 1 succeeded

Location : East US (Zones 1, 2, 3)

Subscription (move) : [Pay-As-You-Go](#)

Subscription ID : 69fc0447-bb32-4449-bce8-002d5b9938c9

Tags (edit) : [Click here to add tags](#)

Operating system : Linux

Size : Standard_B1s (1 instance)

Public IP address : -

Public IP address (IPv6) : -

Virtual network/subnet : [dvsgynet247/default](#)

Orchestration mode : Uniform

Properties Monitoring Capabilities (6) Recommendations Tutorials

Virtual machine profile

Operating system : Linux

Publisher : OpenLogic

Offer : CentOS

Plan : 7_9-gen2

Capacity reservation group : -

Networking

Public IP address : -

Public IP address (IPv6) : -

Virtual network/subnet : [dvsgynet247/default](#)

Size

Size : Standard_B1s

vCPUs : 1

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Microsoft Azure

Home > CreateVmss-OpenLogic.CentOS-7_9-gen2-20220210212958 > dvs-vmss1

dvs-vmss1 | Instances

Virtual machine scale set

Search (Ctrl+/) < Start Restart Stop Reimage Delete Upgrade Refresh Protection Policy

Search virtual machine instances

Name	Computer name	Status	Health state	Provisioning state	Protection policy	Latest model
<input type="checkbox"/> dvs-vmss1_0	dvs-vmss1000000	Running		Succeeded		Yes

Overview

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Access control (IAM)

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Diagnose and solve problems

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Scaling

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Operating system

Security

Guest + host updates

Size

Extensions

Microsoft Azure

Home > CreateVmss-OpenLogic.CentOS-7_9-gen2-20220210212958 > dvs-vmss1 > dvs-vmss1_0

dvs-vmss1_0

Scale set instance

Search (Ctrl+/) < Connect Start Restart Stop Reimage Delete Refresh Upgrade Protection Policy

Overview

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Networking

Connect

Disks

Properties

Monitoring

Insights

Metrics

Support + troubleshooting

Bastion

Serial console

Boot diagnostics

Diagnose and solve problems

New support request

Essentials

Instance ID	: 0	Public IP address	: 20.84.61.183
Status	: Running 1 more	Private IP address	: 10.1.0.4
Location	: East US (Zone 1)	Public IP address (IPv6)	: -
Provisioning state	: Succeeded	Private IP address (IPv6)	: -
Latest model applied	: Yes	Virtual network/subnet	: dvsgvnet247/default
Computer name	: dvs-vmss1000000	Disk	: dvs-vmss1_dvs-vmss1_0_OsDisk_1_1becd8ab79d54dac99379b47ee...
Fault domain	: 1	Protection Policy	: -
SKU	: Standard_B1s	Health state	: -
Tags (edit)	: Click here to add tags		

Show data for last: 1 hour 6 hours 12 hours 1 day 7 days 30 days

CPU (average)

100%
90%
80%
70%
60%

JSON View

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

Home > CreateVmss-OpenLogicCentOS-7.9-gen2-20220210212958 > dvs-vmss1 > dvs-vmss1_0

dvs-vmss1_0 | Networking

Scale set instance

Search (Ctrl+/)

Overview

Settings

Networking

Connect

Disks

Properties

Monitoring

Insights

Metrics

Support + troubleshooting

Bastion

Serial console

Boot diagnostics

Diagnose and solve problems

New support request

dvsgvnet247-nic01

IP configuration

dvsgvnet247-nic01-defaultIpConfig...

Network Interface: dvsgvnet247-nic01

Virtual network/subnet: dvsgvnet247/default

NIC Public IP: 20.84.61.183

NIC Private IP: 10.1.0.4

Accelerated networking: Disabled

Inbound port rules

Outbound port rules

Load balancing

Network security group basicNsgdvsgvnet247-nic01 (attached to network interface: dvsgvnet247-nic01)

Impacts 0 subnets, 1 network interfaces

Add inbound port rule

Priority	Name	Port	Protocol	Source	Destination	Action
65000	AllowVnetInBound	Any	Any	VirtualNetwork	VirtualNetwork	Allow
65001	AllowAzureLoadBalancerInBound	Any	Any	AzureLoadBalancer	Any	Allow
65500	DenyAllInBound	Any	Any	Any	Any	Deny

Need help?

Understand Azure load balancing

Quickstart: Create a public load balancer to load balance Virtual Machines

Let's enable port 22 & 80 so that we can access the servers & application

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

Home > CreateVmss-OpenLogicCentOS-7.9-gen2-20220210212958 > dvs-vmss1 > dvs-vmss1_0

dvs-vmss1_0 | Networking

Scale set instance

Search (Ctrl+/)

Overview

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Support + troubleshooting

Bastion

Serial console

Boot diagnostics

Diagnose and solve problems

New support request

dvsgvnet247-nic01

IP configuration

dvsgvnet247-nic01-defaultIpConfig...

Network Interface: dvsgvnet247-nic01

Virtual network/subnet: dvsgvnet247/default

NIC Public IP: 20.84.61.183

NIC Private IP: 10.1.0.4

Accelerated networking: Disabled

Inbound port rules

Outbound port rules

Load balancing

Network security group basicNsgdvsgvnet247-nic01 (attached to network interface: dvsgvnet247-nic01)

Impacts 0 subnets, 1 network interfaces

Add inbound port rule

Priority	Name	Port	Protocol	Source	Destination	Action
100	Port_80	80	Any	Any	Any	Allow
101	Port_22	22	Any	Any	Any	Allow
65000	AllowVnetInBound	Any	Any	VirtualNetwork	VirtualNetwork	Allow
65001	AllowAzureLoadBalancerInBound	Any	Any	AzureLoadBalancer	Any	Allow
65500	DenyAllInBound	Any	Any	Any	Any	Deny

Need help?

Login in to the server:

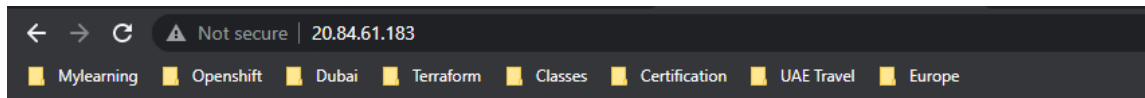
```

root@dvs-vmss1000000:~
Using username "dvsadmin".
dvsadmin@20.84.61.183's password:
[dvsadmin@dvs-vmss1000000 ~]$ sudo su -
[root@dvs-vmss1000000 ~]#

```

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Accessing application:



Hi Team welcome to VMSS

Let's increase the load & see if we are getting new vm's or not.

```
sudo yum install epel-release -y
sudo yum install stress -y
```

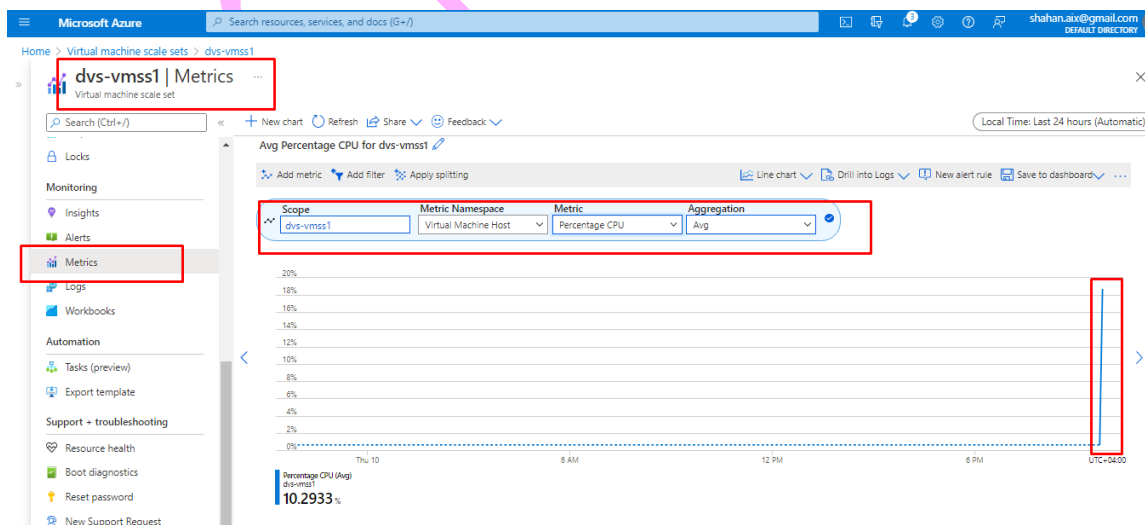
```
Complete!
[root@dvs-vmss1000000 ~]# nohup sudo stress --cpu 8 -v --timeout 30000&
[1] 1866
[root@dvs-vmss1000000 ~]# nohup: ignoring input and appending output to 'nohup.out'

[root@dvs-vmss1000000 ~]# nohup sudo stress --cpu 8 -v --timeout 30000&
[2] 1877
[root@dvs-vmss1000000 ~]# nohup: ignoring input and appending output to 'nohup.out'

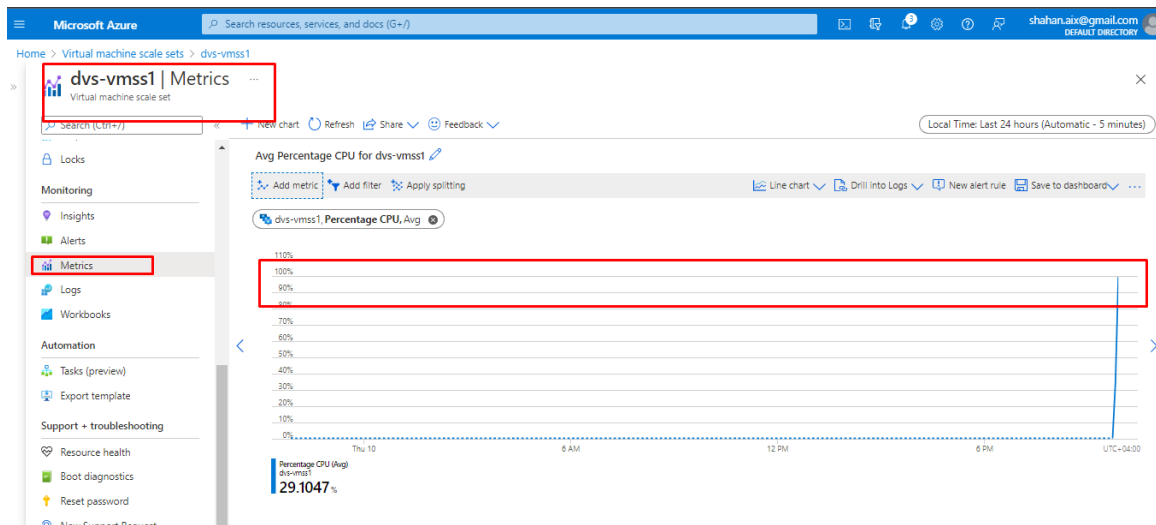
[root@dvs-vmss1000000 ~]# nohup sudo stress --cpu 8 -v --timeout 30000&
[3] 1890
[root@dvs-vmss1000000 ~]# nohup: ignoring input and appending output to 'nohup.out'

[root@dvs-vmss1000000 ~]#
```

Let's verify the monitoring for the VMSS:



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Now cpu spiked to 99%, let's check if we got new server or not

Microsoft Azure

Home > Virtual machine scale sets > dvs-vmss1

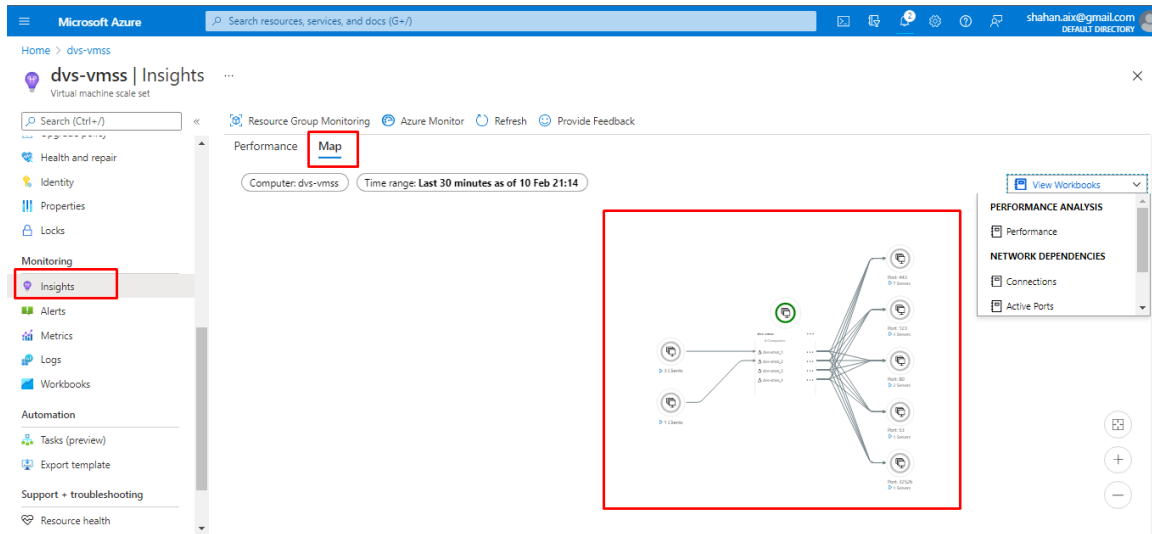
dvs-vmss1 | Instances

Name	Computer name	Status	Health state	Provisioning state	Protection policy	Latest model
dvs-vmss1_0	dvs-vmss1000000	Running	Healthy	Succeeded	Yes	Yes
dvs-vmss1_1	dvs-vmss1000001	Running	Healthy	Succeeded	Yes	Yes
dvs-vmss1_2	dvs-vmss1000002	Creating (Starting)	NotApplicable	Creating	Yes	Yes

We can see that we got the instances.

If you want to enable app insights then you can enable it

App Insights:



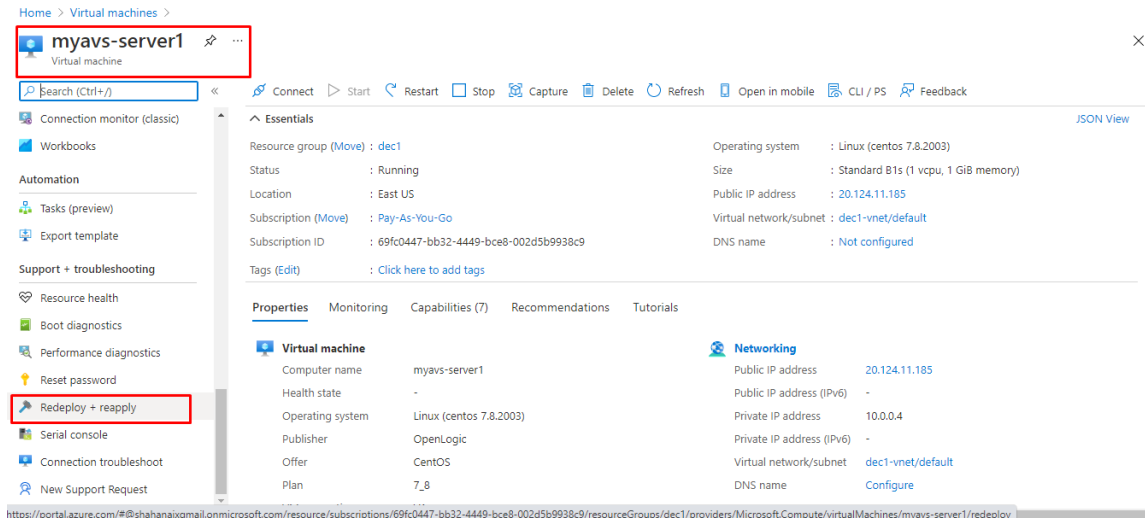
5 Proximity placement group

Proximity placement group:

If you want to place any servers close to each other so that you can reduce the latency between servers then you can keep all the servers under proximity placement group.

6 Redeploy

If in case of any hardware issue in AZ datacenter your vm will may go off or it may not work. If that's the case then you can use the option of redeploy for your VM which help you deploy the vm in other hardware(Rack).



Other option:

Go to the resource group --> deployments --> select the deployment & check the redeploy

