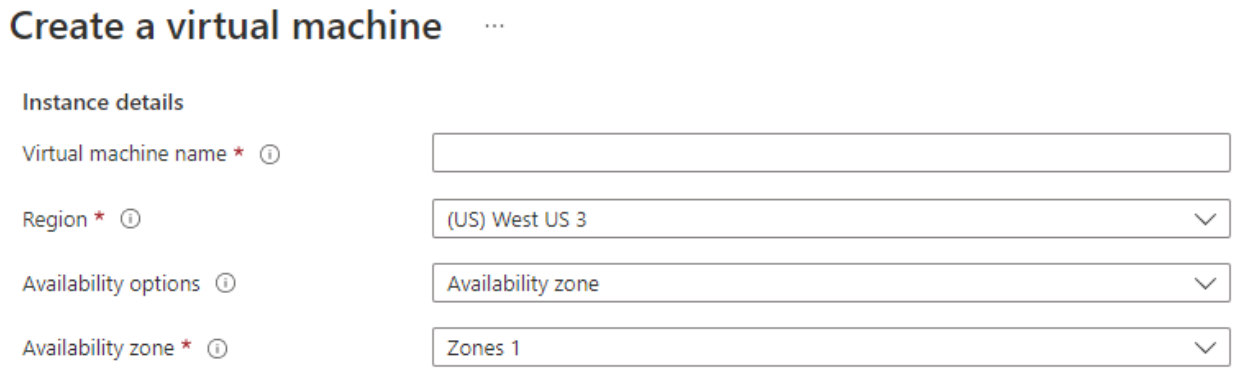
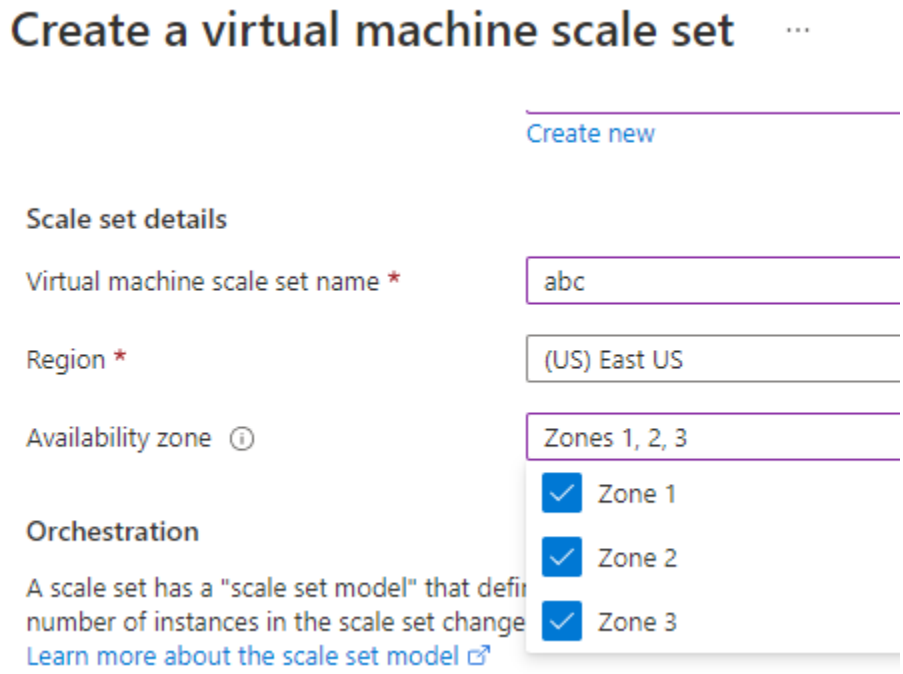
So these are unique physical locations that are equipped with independent Power cooling and networking. nothing but a collection of data centers.
So over here in a particular region or location in Azure, you might have multiple availability zones.
So you could have zone one, zone two and zone three. Each availability zone is a collection of one or more data centers.
So in availability sets, this allows you to spread your VMs across different physical servers or, let's say, racks of physical servers.
Now a data center is an encapsulation of multiple racks, multiple servers,
So over here, when you go ahead and create a VM, a virtual machine, you can actually go ahead and assign it onto an availability zone.
So that will ensure that your virtual machine will be launched in a data center which is mapped onto that availability zone.
When you go ahead and create another virtual machine that would be allocated onto another availability zone, you can go and choose the availability zone to launch your virtual machine.
So over here the advantages are that now this is at the data center level.
So if the entire data center were to go down, right. or All data centers were to go down, then these VMS will not be available, but then your other availability zones would still be available.
That means your virtual machines would also be available.
So over here , you're giving better availability for your infrastructure when it comes to availability Zones.
When it comes to availability zones, you get a better SLA of ninety nine point nine nine percent.
So if you have two or more VMS which are deployed across two or more availability zones, then you get this SLA, one important aspect that also differentiates between availability sets and availability zones, because there is no additional cost for creating an availability set and there is no additional cost for creating an availability zone.
So then students will ask me, why don't we just go ahead and create VMs in availability zones
Because we get a better SLA. we get better availability across the data centers. Well, there is one more new additional costing aspect when it comes to availability zones.
Now, normally, when it comes to VMs in your application, you might have communication across the virtual machines.
There is an extra cost when it comes to the bandwidth, when it comes to the communication across the VMS.
This is not there in availability sets.
So there's no extra cost when it comes to the bandwidth communication.

But when it comes to an availability zone, this is an extra costing aspect.
So you have to go ahead and weigh the costing perspective when it comes to using Availability zones.

WORK WITH AVAILABILITY ZONE :
Create VM > AVAILABILITY - AVAILABILITY ZONE (1,2,3)(deploy vm across different availability zones .)



Create VM SCALE SET > Select region and zone where vm will be deployed . > Select image > INITIAL INSTANCE COUNT - 3 > Create



Review on Availability Zones

- These features help provide better availability for your application by protecting them from datacenter failures.

- Each Availability zone is a unique physical location in an Azure region.
- Each zone comprises of one or more data centers that has independent power, cooling, and networking
- Hence the physical separation of the Availability Zones helps protect applications against data center failures
- Using Availability Zones, you can be guaranteed an availability of 99.99% for your virtual machines. You need to ensure that you have 2 or more virtual machines running across multiple availability zones.