

Virtual Machine Scale Set

The virtual machines are highly flexible such that they can be changed in their size and the performance based on the requirement of the user. The resources which we actually require can be decided by us and then the user can be able to scale up or down the virtual machine. When making changes to the virtual machine size, the cost that is charged for the virtual machine will also vary. Here the size of the virtual machine will include the number of cores, the Random-Access Memory, number of data disks, the IOPS range, SSD size, load balancing feature and premium disk support. The features will vary in between different virtual machine sizes based on their specifications and capabilities. There are different sizes and each of these different sizes have their own features and functionalities and cost. The cost of the virtual machine is actually decided by the size of the virtual machine and the features that virtual machine actually have.

The size of the virtual machines can be broadly classified into three different types namely General Purpose, Compute Optimized, Memory Optimized, Storage Optimized, GPU, High Performance Compute. Now let us try understanding all these in a little deeper level and then jump into the concept of changing the size of the virtual machine. The disk can actually be classified into SSD and HDD.

SSD:

An **SSD** does functionally everything a hard drive does, but data is instead stored on interconnected flash memory chips that retain the data even when there's no power present. The chips can either be permanently installed on the system's motherboard (as on some small laptops and ultraportable), on a PCI Express (PCIe) card (in some high-end workstations and an increasing number of bleeding-edge consumer systems), or in a box that's sized, shaped, and wired to slot in for a laptop or desktop's hard drive (common on everything else). These flash memory chips are of a different type than is used in USB thumb drives, and are typically faster and more reliable. SSDs are consequently more expensive than USB thumb drives of the same capacities.

HDD:

A **hard disk drive (HDD)**, hard disk, **hard drive** or fixed disk is a data storage device that uses magnetic storage to store and retrieve digital information using one or more rigid rapidly rotating disks (platters) coated with magnetic material. These are the same hard disks which we actually use in our machines.

General Purpose:

Under the General-Purpose type of virtual machines, we can find the different models sizes like Dsv3, Dv3, Dsv2, Dv2, DS, D, Av2, A0-7. These machines are balanced CPU-to-memory ratio. Ideal for testing and development, small to medium databases, and low to medium traffic web servers.

Compute Optimized:

Under this type we have Fs, F and these machines have High CPU-to-memory ratio. Good for medium traffic web servers, network appliances, batch processes, and application servers.



Memory optimized:

Under the memory optimized we have the following sizes of virtual machines namely Esv3, Ev3, M, GS, G, DSv2, DS, Dv2, D and these machines have high memory-to-CPU ratio. Great for relational database servers, medium to large caches, and in-memory analytics.

Storage optimized:

The storage optimized has only one virtual machine size and it is Ls and it has high disk throughput and IO. Ideal for Big Data, SQL, and NoSQL databases.

GPU:

The GPU has two different sizes namely NV, NC and they are specialized virtual machines targeted for heavy graphic rendering and video editing. Available with single or multiple GPUs.

High Performance Compute:

They have two sizes namely H, A8-11. They are the fastest and most powerful CPU virtual machines with optional high-throughput network interfaces (RDMA).

Cores:

The cores are the total number of processors that are actually going to be found in a VM. The more the number of cores, the more the processing speed will be.

Data Disks:

The data disks are the number of storage disks that will be given to the virtual machine. By default, there will be a temporary data disk. The data in this will be deleted each and every time when the virtual machine is restarted. These can be considered as the partitioned disks in the machine.

IOPS:

The IOPS are abbreviated as Input Output Operations Per Second. The more the number of IOPS, the more faster the instructions will be processed.

Premium Disk:

The premium disk is faster than the normal disks. They actually have the ability to process and store the data faster than the normal disks.

Different Sizes:

The size of the machine will vary with different features and the cost will be depending on the size of the machine that we actually choose. The below are the different sizes which we can find under the SSD.



DS1_V2 Standard	DS2_V2 Standard	DS3_V2 Standard	DS4_V2 Standard	DS5_V2 Standard	DS11_V2 Standard	DS12_V2 Standard	DS13_V2 Standard	DS14_V2 Standard
1 Core 3.5 GB	2 Cores 7 GB	4 Cores 14 GB	8 Cores 28 GB	16 Cores 56 GB	2 Cores 14 GB	4 Cores 28 GB	8 Cores 56 GB	16 Cores 112 GB
2 Data disks 3200 Max IOPS 7 GB Local SSD	4 Data disks 6400 Max IOPS 14 GB Local SSD	8 Data disks 12800 Max IOPS 28 GB Local SSD	16 Data disks 25600 Max IOPS 56 GB Local SSD	32 Data disks 51200 Max IOPS 112 GB Local SSD	4 Data disks 6400 Max IOPS 28 GB Local SSD	8 Data disks 12800 Max IOPS 56 GB Local SSD	16 Data disks 25600 Max IOPS 112 GB Local SSD	32 Data disks 50000 Max IOPS 224 GB Local SSD
Load balancing	Load balancing	Load balancing	Load balancing	Load balancing	Load balancing	Load balancing	Load balancing	Load balancing
Premium disk support	Premium disk support	Premium disk support	Premium disk support	Premium disk support	Premium disk support	Premium disk support	Premium disk support	Premium disk support
4,179.93 <small>(INR/MONTH (ESTIMATED))</small>	8,310.68 <small>(INR/MONTH (ESTIMATED))</small>	16,572.18 <small>(INR/MONTH (ESTIMATED))</small>	33,193.54 <small>(INR/MONTH (ESTIMATED))</small>	66,387.07 <small>(INR/MONTH (ESTIMATED))</small>	9,343.37 <small>(INR/MONTH (ESTIMATED))</small>	18,637.56 <small>(INR/MONTH (ESTIMATED))</small>	37,275.11 <small>(INR/MONTH (ESTIMATED))</small>	74,550.22 <small>(INR/MONTH (ESTIMATED))</small>
DS15_V2 Standard	DS2_V2 Promo	DS3_V2 Promo	DS4_V2 Promo	DS5_V2 Promo	DS11_V2 Promo	DS12_V2 Promo	DS13_V2 Promo	DS14_V2 Promo
20 Cores 140 GB	2 Cores 7 GB	4 Cores 14 GB	8 Cores 28 GB	16 Cores 56 GB	2 Cores 14 GB	4 Cores 28 GB	8 Cores 56 GB	16 Cores 112 GB
40 Data disks 62500 Max IOPS 280 GB Local SSD	4 Data disks 6400 Max IOPS 14 GB Local SSD	8 Data disks 12800 Max IOPS 28 GB Local SSD	16 Data disks 25600 Max IOPS 56 GB Local SSD	32 Data disks 51200 Max IOPS 112 GB Local SSD	4 Data disks 6400 Max IOPS 28 GB Local SSD	8 Data disks 12800 Max IOPS 56 GB Local SSD	16 Data disks 25600 Max IOPS 112 GB Local SSD	32 Data disks 50000 Max IOPS 224 GB Local SSD
Load balancing	Load balancing	Load balancing	Load balancing	Load balancing	Load balancing	Load balancing	Load balancing	Load balancing
Premium disk support	Premium disk support	Premium disk support	Premium disk support	Premium disk support	Premium disk support	Premium disk support	Premium disk support	Premium disk support
93,187.78 <small>(INR/MONTH (ESTIMATED))</small>	6,638.71 <small>(INR/MONTH (ESTIMATED))</small>	13,326.59 <small>(INR/MONTH (ESTIMATED))</small>	26,604.01 <small>(INR/MONTH (ESTIMATED))</small>	53,208.01 <small>(INR/MONTH (ESTIMATED))</small>	8,212.33 <small>(INR/MONTH (ESTIMATED))</small>	16,424.65 <small>(INR/MONTH (ESTIMATED))</small>	32,898.48 <small>(INR/MONTH (ESTIMATED))</small>	65,796.97 <small>(INR/MONTH (ESTIMATED))</small>

F1S Standard	F2S Standard	F4S Standard	F8S Standard	F16S Standard
1 Core 2 GB	2 Cores 4 GB	4 Cores 8 GB	8 Cores 16 GB	16 Cores 32 GB
2 Data disks 3200 Max IOPS	4 Data disks 6400 Max IOPS	8 Data disks 12800 Max IOPS	16 Data disks 25600 Max IOPS	32 Data disks 51200 Max IOPS
Load balancing	Load balancing	Load balancing	Load balancing	Load balancing
Premium disk support	Premium disk support	Premium disk support	Premium disk support	Premium disk support
2,999.71 <small>(INR/MONTH (ESTIMATED))</small>	5,950.25 <small>(INR/MONTH (ESTIMATED))</small>	11,900.50 <small>(INR/MONTH (ESTIMATED))</small>	23,751.82 <small>(INR/MONTH (ESTIMATED))</small>	47,503.64 <small>(INR/MONTH (ESTIMATED))</small>

Same way for the **HDD**, the size of the virtual machine and their features will actually differ. The below images are the different sizes with some higher cost for virtual machines with the HDD.

DS1_V2 Standard	DS2_V2 Standard	DS3_V2 Standard	DS4_V2 Standard	DS5_V2 Standard	DS11_V2 Standard	DS12_V2 Standard	DS13_V2 Standard	DS14_V2 Standard
1 Core 3.5 GB	2 Cores 7 GB	4 Cores 14 GB	8 Cores 28 GB	16 Cores 56 GB	2 Cores 14 GB	4 Cores 28 GB	8 Cores 56 GB	16 Cores 112 GB
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Load balancing	Load balancing	Load balancing	Load balancing	Load balancing	Load balancing	Load balancing	Load balancing	Load balancing
Premium disk support	Premium disk support	Premium disk support	Premium disk support	Premium disk support	Premium disk support	Premium disk support	Premium disk support	Premium disk support
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DS15_V2 Standard	DS2_V2 Promo	DS3_V2 Promo	DS4_V2 Promo	DS5_V2 Promo	DS11_V2 Promo	DS12_V2 Promo	DS13_V2 Promo	DS14_V2 Promo
20 Cores 140 GB	2 Cores 7 GB	4 Cores 14 GB	8 Cores 28 GB	16 Cores 56 GB	2 Cores 14 GB	4 Cores 28 GB	8 Cores 56 GB	16 Cores 112 GB
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Load balancing	Load balancing	Load balancing	Load balancing	Load balancing	Load balancing	Load balancing	Load balancing	Load balancing
Premium disk support	Premium disk support	Premium disk support	Premium disk support	Premium disk support	Premium disk support	Premium disk support	Premium disk support	Premium disk support
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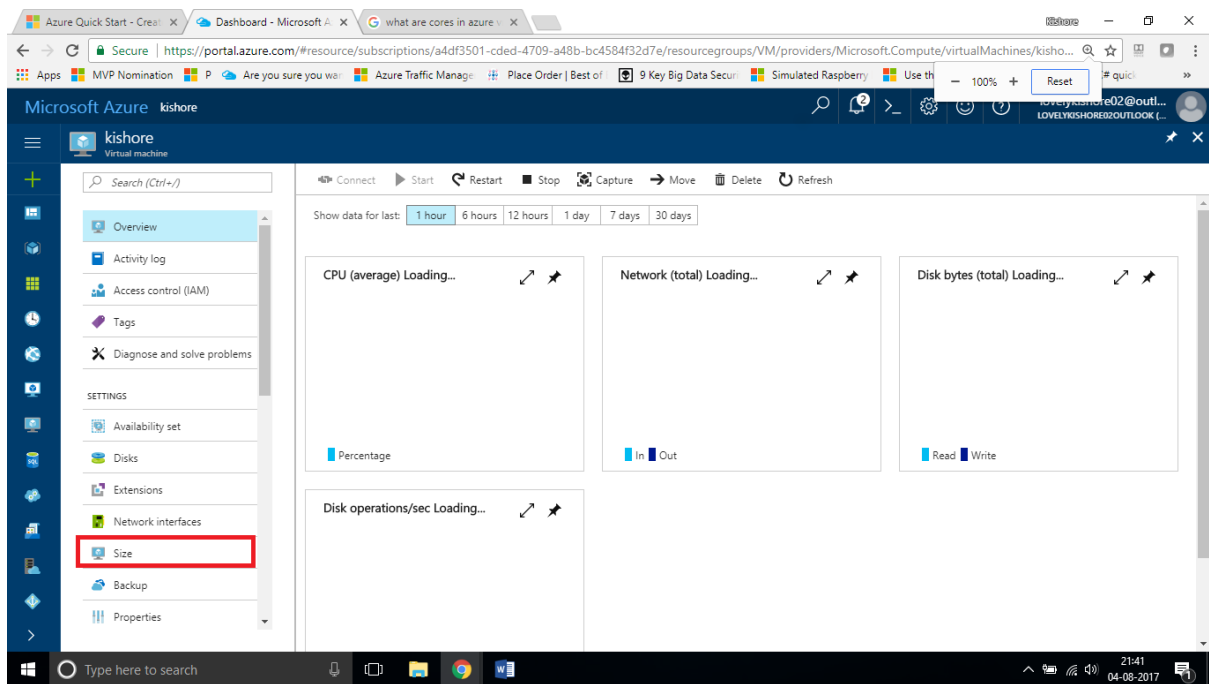


D1_V2 Standard 1 Cores 3.5 GB 2 Data disks 2x500 Max IOPS 500 GB Local SSD Load balancing 4,179.93 <small>(INR/MONTH ESTIMATED)</small>	D2_V2 Standard 2 Cores 7 GB 4 Data disks 4x500 Max IOPS 200 GB Local SSD Load balancing 8,310.68 <small>(INR/MONTH ESTIMATED)</small>	D3_V2 Standard 4 Cores 14 GB 8 Data disks 8x500 Max IOPS 400 GB Local SSD Load balancing 16,572.18 <small>(INR/MONTH ESTIMATED)</small>	D4_V2 Standard 8 Cores 28 GB 16 Data disks 16x500 Max IOPS 800 GB Local SSD Load balancing 33,193.54 <small>(INR/MONTH ESTIMATED)</small>	D5_V2 Standard 16 Cores 56 GB 32 Data disks 32x500 Max IOPS 800 GB Local SSD Load balancing 66,387.07 <small>(INR/MONTH ESTIMATED)</small>	D11_V2 Standard 2 Cores 14 GB 4 Data disks 4x500 Max IOPS 100 GB Local SSD Load balancing 9,343.37 <small>(INR/MONTH ESTIMATED)</small>	D12_V2 Standard 4 Cores 28 GB 8 Data disks 8x500 Max IOPS 200 GB Local SSD Load balancing 18,637.56 <small>(INR/MONTH ESTIMATED)</small>	D13_V2 Standard 8 Cores 56 GB 16 Data disks 16x500 Max IOPS 400 GB Local SSD Load balancing 37,275.11 <small>(INR/MONTH ESTIMATED)</small>	D14_V2 Standard 16 Cores 112 GB 32 Data disks 32x500 Max IOPS 800 GB Local SSD Load balancing 74,550.22 <small>(INR/MONTH ESTIMATED)</small>
D15_V2 Standard 20 Cores 140 GB 40 Data disks 40x500 Max IOPS 1000 GB Local SSD Load balancing 93,187.78 <small>(INR/MONTH ESTIMATED)</small>	D2_V2 Promo 2 Cores 7 GB 4 Data disks 6000 Max IOPS 100 GB Local SSD Load balancing 6,638.71 <small>(INR/MONTH ESTIMATED)</small>	D3_V2 Promo 4 Cores 14 GB 8 Data disks 12000 Max IOPS 200 GB Local SSD Load balancing 13,326.59 <small>(INR/MONTH ESTIMATED)</small>	D4_V2 Promo 8 Cores 28 GB 16 Data disks 24000 Max IOPS 400 GB Local SSD Load balancing 26,604.01 <small>(INR/MONTH ESTIMATED)</small>	D5_V2 Promo 16 Cores 56 GB 32 Data disks 48000 Max IOPS 800 GB Local SSD Load balancing 53,208.01 <small>(INR/MONTH ESTIMATED)</small>	D11_V2 Promo 2 Cores 14 GB 4 Data disks 6000 Max IOPS 100 GB Local SSD Load balancing 8,212.33 <small>(INR/MONTH ESTIMATED)</small>	D12_V2 Promo 4 Cores 28 GB 8 Data disks 12000 Max IOPS 200 GB Local SSD Load balancing 16,424.65 <small>(INR/MONTH ESTIMATED)</small>	D13_V2 Promo 8 Cores 56 GB 16 Data disks 24000 Max IOPS 400 GB Local SSD Load balancing 32,898.48 <small>(INR/MONTH ESTIMATED)</small>	D14_V2 Promo 16 Cores 112 GB 32 Data disks 48000 Max IOPS 800 GB Local SSD Load balancing 65,796.97 <small>(INR/MONTH ESTIMATED)</small>
F15 Standard 1 Core 2 GB 2 Data disks 3200 Max IOPS Load balancing Premium disk support 2,999.71 <small>(INR/MONTH ESTIMATED)</small>	F25 Standard 2 Cores 4 GB 4 Data disks 6400 Max IOPS Load balancing Premium disk support 5,950.25 <small>(INR/MONTH ESTIMATED)</small>	F45 Standard 4 Cores 8 GB 8 Data disks 12800 Max IOPS Load balancing Premium disk support 11,900.50 <small>(INR/MONTH ESTIMATED)</small>	F85 Standard 8 Cores 16 GB 16 Data disks 25600 Max IOPS Load balancing Premium disk support 23,751.82 <small>(INR/MONTH ESTIMATED)</small>	F165 Standard 16 Cores 32 GB 32 Data disks 51200 Max IOPS Load balancing Premium disk support 47,503.64 <small>(INR/MONTH ESTIMATED)</small>	F1 Standard 1 Core 2 GB 2 Data disks 3200 Max IOPS Load balancing 2,999.71 <small>(INR/MONTH ESTIMATED)</small>	F2 Standard 2 Cores 4 GB 4 Data disks 6400 Max IOPS Load balancing 5,950.25 <small>(INR/MONTH ESTIMATED)</small>	F4 Standard 4 Cores 8 GB 8 Data disks 12800 Max IOPS Load balancing 11,900.50 <small>(INR/MONTH ESTIMATED)</small>	F8 Standard 8 Cores 16 GB 16 Data disks 25600 Max IOPS Load balancing 23,751.82 <small>(INR/MONTH ESTIMATED)</small>
F16 Standard 16 Cores 32 GB 32 Data disks 32x500 Max IOPS Load balancing 47,503.64 <small>(INR/MONTH ESTIMATED)</small>	A1_V2 Standard 1 Core 2 GB 2 Data disks 2x500 Max IOPS Load balancing 2,311.25 <small>(INR/MONTH ESTIMATED)</small>	A2_V2 Standard 2 Cores 4 GB 4 Data disks 4x500 Max IOPS Load balancing 4,819.21 <small>(INR/MONTH ESTIMATED)</small>	A4_V2 Standard 4 Cores 8 GB 8 Data disks 8x500 Max IOPS Load balancing 10,130.18 <small>(INR/MONTH ESTIMATED)</small>	A8_V2 Standard 8 Cores 16 GB 16 Data disks 16x500 Max IOPS Load balancing 21,293.04 <small>(INR/MONTH ESTIMATED)</small>	A2M_V2 Standard 2 Cores 16 GB 4 Data disks 4x500 Max IOPS Load balancing 7,081.29 <small>(INR/MONTH ESTIMATED)</small>	A4M_V2 Standard 4 Cores 32 GB 8 Data disks 8x500 Max IOPS Load balancing 14,801.86 <small>(INR/MONTH ESTIMATED)</small>	A8M_V2 Standard 8 Cores 64 GB 16 Data disks 16x500 Max IOPS Load balancing 31,128.16 <small>(INR/MONTH ESTIMATED)</small>	A0 Standard 1 Core 0.75 GB 1 Data disks 1x500 Max IOPS Load balancing 885.16 <small>(INR/MONTH ESTIMATED)</small>
A1 Standard 1 Core 1.75 GB 2 Data disks 2x500 Max IOPS Load balancing 2,901.36 <small>(INR/MONTH ESTIMATED)</small>	A2 Standard 2 Cores 3.5 GB 4 Data disks 4x500 Max IOPS Load balancing 5,802.72 <small>(INR/MONTH ESTIMATED)</small>	A3 Standard 4 Cores 7 GB 8 Data disks 8x500 Max IOPS Load balancing 11,605.44 <small>(INR/MONTH ESTIMATED)</small>	A4 Standard 8 Cores 14 GB 16 Data disks 16x500 Max IOPS Load balancing 23,210.89 <small>(INR/MONTH ESTIMATED)</small>	A5 Standard 2 Cores 14 GB 4 Data disks 4x500 Max IOPS Load balancing 11,507.09 <small>(INR/MONTH ESTIMATED)</small>	A6 Standard 4 Cores 28 GB 8 Data disks 8x500 Max IOPS Load balancing 23,014.19 <small>(INR/MONTH ESTIMATED)</small>	A7 Standard 8 Cores 56 GB 16 Data disks 16x500 Max IOPS Load balancing 46,028.37 <small>(INR/MONTH ESTIMATED)</small>	A0 Basic 1 Core 0.75 GB 1 Data disks 1x300 Max IOPS 786.81 <small>(INR/MONTH ESTIMATED)</small>	A1 Basic 1 Core 1.75 GB 2 Data disks 2x300 Max IOPS 1,622.80 <small>(INR/MONTH ESTIMATED)</small>
A2 Basic 2 Cores 3.5 GB 4 Data disks 4x300 Max IOPS 4,622.51 <small>(INR/MONTH ESTIMATED)</small>	A3 Basic 4 Cores 7 GB 8 Data disks 8x300 Max IOPS 10,277.70 <small>(INR/MONTH ESTIMATED)</small>	A4 Basic 8 Cores 14 GB 16 Data disks 16x300 Max IOPS 20,555.40 <small>(INR/MONTH ESTIMATED)</small>						

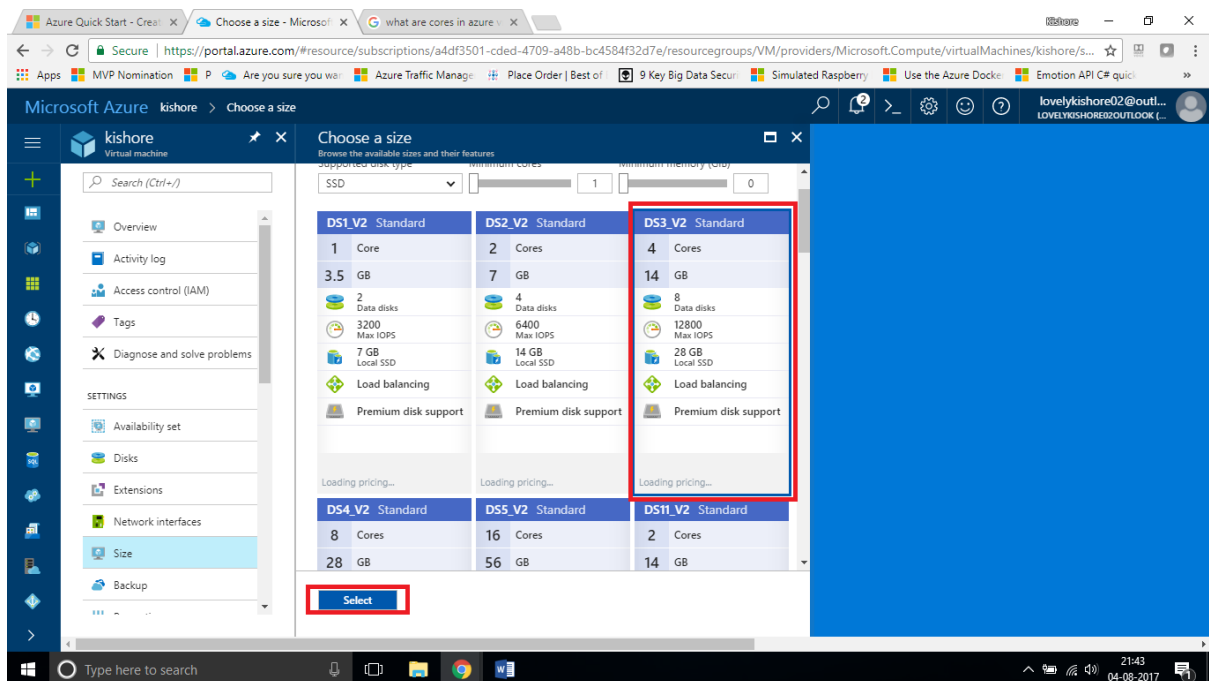
Scaling Up the Virtual Machine:

Hope you have got an idea about the different sizes and cost of the virtual machines. Now let us end this by seeing the method of changing the size of the virtual machine. For that you should have already created a virtual machine. When you actually change the size of your virtual machine, it actually reconfigures and hence it will take some time to restart and process with the new resources. Now get into the azure portal and click on the virtual machine that you have created. Then in the left side menu, find something called **Size**.





When you click on that you will be shown with the different sizes that are actually available. Choose one appropriate size that you actually need and then click on the **Select** button. This will now actually reconfigure your virtual machine and reset it with the new resources by restarting it.



This is how we can scale set the size of our virtual machine based on the requirement that we actually have. We can scale down the size if we actually don't need the allocated resources and some unwanted time. All these are possible with the help of this flexible scale set feature of the virtual machine.