

Azure Virtual Machines

Summary and overview Assignment – 01



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# Azure Virtual Machines Overview

Azure Virtual Computers are Microsoft Azure's on-demand computing resources or virtual machines. When a VM is required, we can use it as a service and turn it off when not in use. Azure Virtual Machines are categorized as Infrastructure as a Service (IaaS) in Azure. We have more control over the environment using Azure Virtual Machines, allowing us to modify the development or hosting environment. In reality, the Azure Virtual Machine is based on the same virtualization technology that underpins the entire cloud platform.

# Virtualization

This is exactly what it sounds like: the process of virtualizing resources such as computation, storage, network, and cloud services. By sharing the Hardware specifications, we may also establish a virtual machine (VM) on our own system. Similarly, in large data centers, cloud service providers share certain physical servers, which are then virtualized and made available to a large number of cloud service clients. Hardware virtualization includes Azure VMs.

Icon

Description automatically generated

# Virtual Machine

A virtual machine is a pre-built computer system made available using the Visualization principle. That example, a virtual machine (VM) is a duplicate of a shared resource in a data centre that may be optimised and used as needed. We can install any operating system we choose, connect to networks, and use shared storage.

What is the purpose of Azure Virtual Machine?

Developers are continually debating whether to use Azure PaaS Services or Azure IaaS Services to construct and develop cloud-based applications that take advantage of Azure's greatest capabilities. Understanding the capabilities of Azure IaaS and Azure PaaS is critical in such cases. Let us try to comprehend some of the characteristics and capabilities of Azure VMs after learning about the Azure PaaS area in previous articles.

Developers have better control over the development environment with Azure VMs, which is especially useful for developing a highly secure architecture for a complicated application. To create a sandbox solution, developers can choose from a variety of operating systems, networking options, and storage interfaces.

Easy Diagnostics - Azure VMs offers alternatives for troubleshooting difficulties such as remote debugging, event logs, IIS logs, application logs, and so on.

Alarms — Based on the metrics of computing resources required by the VM, we can set up actions and alerts.

Pricing - If the VMs aren't in use, we can turn them off and on. There will be no payment for a VM that has been stopped. The VM's state will be preserved if it is restarted using persistent discs.

Scaling - The virtual machines can be scaled up, down, and out/in. The auto scale tool is also available to help with support based on certain metrics. For example, if CPU use is greater than 70% for more than 5 minutes, scale out to 5 instances.

Virtual Machine Scale Sets are a collection of VMs that have the same configuration and are managed by a load balancer.

Size of a Virtual Machine

We can construct a VM in Azure Portal by selecting from a list of pre-loaded operating systems from the marketplace, such as Windows Virtual Machine and Linux Virtual Machine. Virtual machines in the marketplace are comparable in size and type for both Windows and Linux.

Sizes: Av2, B, Dv2, Dv3, DSv2, Dsv3, DSv2, Dsv3 These Azure VM sizes are often used for small to medium-traffic web servers and can be utilised for development or testing. It boasts a well-balanced processor-to-memory ratio.

Sizes: F, Fs, FSv2 - Compute optimised This category is designed to handle large amounts of background work. This size group is ideal for a web server with moderate traffic and a high CPU to memory ratio.

Sizes: Ev3, ESv3, G, M, GS Memory Optimized These virtual machines feature a high memory-to-processor ratio, making them ideal for relational databases and in-memory analytics.

Size: Ls – Storage Optimized This virtual machine category is appropriate for huge databases, such as No SQL and Big Data storage. Its throughput and IO operations are both high.

NV, NC, NCv2, NCv3, NCv3 -Sizes: NV, NC, NCv2, NCv3 GPU optimised virtual machine sizes are dedicated virtual machines designed for high-density graphical rendering or video editing. These sizes are intended for workloads that are compute-intensive, graphics-intensive, or visualization-intensive.

Size H – High-Performance This is the VM with the maximum throughput and network interfaces in the highest power category.

# Virtual Machine Architecture

Graphical user interface, diagram, application

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A resource group is a logical container for all connected resources depending on the resources' lifetime. This also aids in providing users with access to a certain set of resources associated with the same resource group.

Virtual machine - A virtual machine can be established in Azure via the portal, PowerShell, or Azure CLI from a list of published images or by uploading a custom image VHD file to Azure Blob.

Temporary disc - The VM also has a temporary disc on the host system, which is stored on a physical drive. During reboot occurrences, it does not persist.

Virtual network (VNet) - VMs can be placed on their own virtual network (VNet), which can be divided into several subnets to accommodate various layers of application architecture. Each subnet should be assigned to a distinct Network Security Group (NSG) with well defined inbound and outbound rules for allowing or disallowing web traffic.

The Network Interface (NIC) allows the Virtual Machine to be setup for the Virtual Network.

A public IP address is automatically assigned to a VM. This is used to communicate with a VM from a remote location, similar to Remote Desktop.