

Assignement 2

by Ethan Robert Matthews

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CLOUD COMPUTING ARCHITECTURE

Assignment 2: Practical Assignment

Due Date: 09/01/23

Current Date: 02/01/23

Assignment 2

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Introduction

In my report I will be speaking about contents and resources that are associated with VMs (Virtual Machines). I will be speaking of things such as hard drives and how Virtual Machines are created and managed. I will also be describing vNets and different network security groups.

Task 1 - Resources associated with a Virtual Machine.

As mentioned briefly in my introduction on page 2, in this first section of my report I will be speaking about the resources that are associated with Virtual Machines. These could be anything from the virtual hard drives to how a Virtual machine is created and managed over time.

The first thing I will be speaking about will be the Virtual Hard Drives.

Virtual Hard Drives

What are Virtual Hard Drives and what are their purposes?

A Virtual Hard Drive or Hard Disk (VHD) is a form of file format that represents a Physical Hard Disk Drive and the contents that one could contain. For example, on the Virtual Machine it would replicate the computer's physical Hard Drive including all its data and structural elements (Awati 2022). There are also multiple different types of VHDs such as Fixed, Dynamic or Differencing.

A fixed VHD means that it has a set amount of storage on the host's hard disk drive and it will not vary.

A dynamic VHD has a varying disk size meaning that the storage size is changed over time with the addition of extra data being piled into it.

And then finally a differencing VHD is a type of VHD that can be used to create copies of existing disks.

How Virtual Machines are created.

Virtual machines are created by the use of different types of virtualization technologies. Technologies such as Microsoft Azure allow you to create your own virtual machine and different resource groups to go along with it. We create these different types of virtual machines to help us with the benefit of it acting as a normal computer, instead of putting it to use to emulate any type of operating system to create a separate work environment exactly the same as one a person might be used to.

We create virtual machines with a variety of different benefits too, we create them to be easily accessible to be able to be integrated into an organisation's servers which allows for safe yet stable remote access when needed. They also provide good security because it is all in the cloud with great protection to do with cyber security and attacks.

How are Virtual Machines managed?

Typically in an organisation virtual machines are managed by a manager or even a system administrator. Typically they manage it by configuring the hypervisor of said virtual machine that needs to be managed.

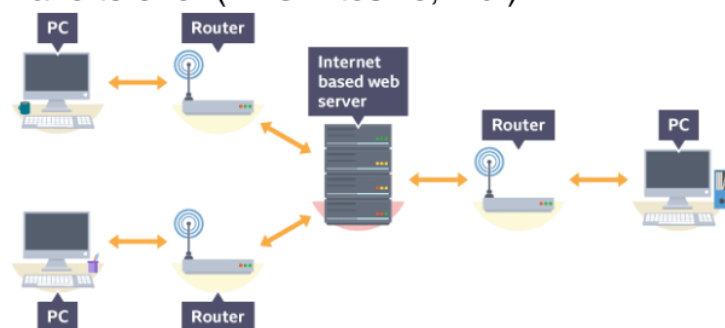
Management of a virtual machine could include the likes of creating, modifying or even deleting the virtual machine.

Next, the role of the hypervisor when it comes to this would be a Virtual Machine Monitor or a VMM for short. In this case the tool would sync up with the Hypervisor to provide the user with a variety of different charts or graphs portrayed in a way that the user would understand what is going on with the virtual machine. This also gathers all the health and status of the virtual machine/s and also involves other activities such as coordination or administrating different tasks (Netreo 2022).

What about vNets?

A vNet or a virtual network is used to connect some virtual machines and devices using software. For example, when speaking about this we can use the OSI 7 layer model with the use of the second and third layers and talking about switches and routers.

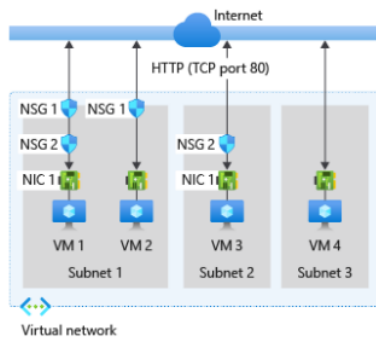
Virtual networks also form connections across the internet which then allow for file sharing and then direct end to end communication. Even in some organisations these days, they use virtual networks to allow remote access from home to the organisation's variety of data and the facilities that they would have to offer (BBC Bitesize, n.d.).



(Image from BBC Bitesize - Virtual Networks)

Network Security Groups

In Microsoft Azure, a network security group contains a set of security rules that allow for access or denial of entry for inbound to outbound traffic in a network for the different types of azure resources. As well as this it also allows for you to set a specific source destination and protocol (Microsoft 2022).

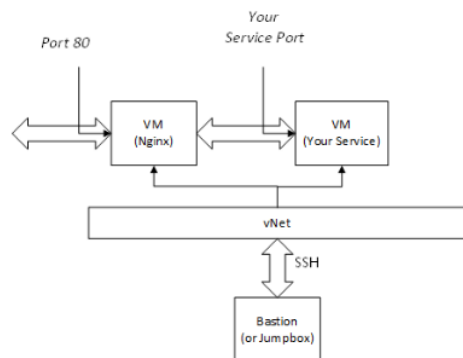


For example, in this image from microsoft it shows how many different security groups could be deployed across a virtual network via the use of port 80.

Additional Exercise

In this section of my report would be an additional exercise that I have been tasked with. With this exercise I will also be combining the use of a 10 - 15 minute long video composed of me demonstrating the creation of a virtual machine.

The additional exercise involves me creating two virtual machines, with me installing Nginx on the first and then an image of my choice, such as a database on the second one.



This should be what the creation of my two virtual machines should be.

As mentioned above I will be creating the virtual machine in my 10 - 15 minute long video.

https://youtu.be/H2uz75_n8e8

References

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Assignement 2

GRADEMARK REPORT

FINAL GRADE

62/100

GENERAL COMMENTS

Instructor

VM Resources (40):30

VM Images (35): 18

Config Exercise (20):10

Demo (5): 4

Feedback:

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You could have provided a little more discussion with examples of how to manage VMs. YOU needed to give more of an explanation of what a NSG actually is i.e. in/out network rules.

You discussed and demo'd the use of images in your video.

The demo got as far as creating the VM using the vNet but then you got stuck.

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