

Josh

by Josh Naylor

Submission date: 17-Nov-2022 03:21PM (UTC+0000)

Submission ID: 189327501

File name: 32136_Josh_Naylor_Josh_460442_2003994928.docx (20.41K)

Word count: 2385

Character count: 10420

Cloud Computing Architecture

Table of Contents

CLOUD COMPUTING ARCHITECTURE	1
WHAT IS VIRTUALISATION?	1
WHAT IS A VIRTUAL MACHINE?	2
WEB SERVICE EVALUATE	3
AUTHORISATION AND AUTHENTICATION	5
SECURITY	5
REFERENCE	6

What is virtualisation?

The term virtualisation means that it is not actual but a version of something this could be such as a server, storage equipment or network resources. If you wanted to use virtualization you have to use it, you will have to use software to create a virtual system. You can use virtualization as an alternative to hardware functionality. This is added between the OS and hardware as this will allow you to run lots of VMs at once on a single computer this could be a benefit to a company that has a single person running lots of computers at once as all you need is one computer to run 1000 Virtual (computers) Machines. There are lots of benefits of using virtualisation as you can have a high recovery as you can easily just duplicate a guest system and you will have a backup of your system. Another advantage is that you can easily deploy a system like a server or an application when you are using a VM. You could also use debugging when you are using it as you can easily test the different environments you could easily create and destroy the different applications. When you have lots of people who want to use the computers, but you don't have an office you could have a lot of people on the server with their computers online. If you did have an office with virtualisation but one of the physical systems fails, you could easily replace or relocate the guest's computer to another one as you would have to touch a single wire. There is also reduced cost of the ownership as you could be paying for things like power and cooling for the servers and computers. One of the main benefits of virtualisation is that you can consolidate the hardware. as what this means is that you could be running lots of different services all on one computer instead of having lots of computers in one room doing all different tasks as using one computer is much cheaper.

What is a Virtual Machine?

The phrase for Virtual Machine is VM. This is a resource that can use software that will run on a computer but the computer is just there to host the software as it will be very helpful with the VM as most of the speed and power that you would have on the VM will come from the server that is hosting the VM as when you have the VM hosted you can run as many of the VM on that machines as capable. When you are running the machines, you can have one of the machines with lower performance than other VM on the same network as one of them could have more and one could have a lot less power, but they will be still running on the same server. When you are running the VMs you can have lots of applications you wouldn't be able to have on a physical computer as you would be running a higher spec computer as it is just a bit of software, and the hardware is stored somewhere else. The VM server is backed up in another location where the host machine is as this is the safest way to do it and you can also access the VM from anywhere in the world. As this would be good if you had remote workers as you can send them anywhere in the world and they could still work from a computer. when you are using a VM you will get added benefits as you can have a lot more security as you will not have to deal with any of that as it is all in the server network which is attached to the VM. This means they will have a lot of security for the servers as they will be hosting a lot of people, so they must have a lot more security than an average computer. when you are hosted by a VM server you will also not have to worry about the managing part of the software as you will not have to keep cleaning out your hard drive as all you need to do is buy some more storage for your VM and you will be good or you even the most boring thing of updating your computer as with a VM you will do that for you so you don't have to.

Web service evaluate

If you were to switch over to the cloud infrastructure there would be many benefits and there might be some disadvantages with the research but before I tell you all of that, in my opinion, it would be a good idea. The main benefit and the one most companies are looking for is the price as moving to the cloud is a cheap way of storing data and using the services you know longer have to upgrade your hardware and software as the cloud provider will do it for you, you know longer have to pay the wages for the staff you would have had to pay for when you had your server as well as the cost of electricity as you would have to keep the servers running 24/7 and you would have to have air-con and gas systems on as they would cost a lot of money to run them. This would be a very large benefit to a medium-level company as this would have cost a lot if you would have run it yourself. The costliest part would be the staff. As in any business the staff always cost the most especially a business that will need more expert people as you would have to pay them more than usual. When you own a business, you always got to look to grow your business and kind of look into the future. When you move to the cloud you can easily scale your business up or down as when you have the cloud you can just keep expanding your storage as you will grow your business to more customers you will need more storage. As you will need more storage when you get more customers you could easily do that by setting up a cloud. You can easily scale a business with the cloud as you won't have to purchase all the other hardware that can be expensive as most computers and the storage is the most expensive part of it. When you leave it to the service provider you can have all this expensive equipment can be bought by them and rented by you. One of the services is IaaS which stands for infrastructure as a service. The vendor which is mostly liking going to be Amazon (AWS) which will give you the storage, network, access to servers and virtualization. When you choose the IaaS provider you will be having to choose what resources you would like you can either choose public where you will have to share most of your resources then there is private where you would get your resources and don't share them as this would be a benefit to you, but it can be much more expensive than the public path. Although there is a combination of public and private and it's called hybrid cloud, and this would be a much cheaper option than having either the private or public. The main benefits are "making workloads faster, easier, more flexible and more cost-efficient." [1]. The IaaS allows the user to make the process more and more automated as you can keep developing the infrastructure. As you will have the cloud to carry the load of the business for you. The next service is SaaS, and which stands for

software as a service. This service works by providing host applications and then they make the easy to access over the internet. The main company to use this service is Netflix as they stream a large library of movies and TV shows over the cloud and then the end user can access the whole library from anywhere over the world as they have servers everywhere in the world. Most of the companies that will use this will need a third party to host the application which is the independent software vendor or ISV for short. If they are a very large company like Microsoft, they can host it themselves. In this cloud model, the software provider will host all the related data on their devices. On the other hand, you can "an ISV that contracts a cloud provider to host the application in the provider's data centre" [2]. When you have another company to do this for you can have a lot more advantages as you can have flexible payments as the company that provides it will estimate how much they think you will send each month as this is better for budgeting as you will need to budget for a company. Another advantage is that you will get automatic updates for the application as your company will not have to worry about updates each time the updates come out. The last one is PaaS, which stands for Platform as a service, and this will help you run your business as it will provide hardware and software over the internet which will help the companies. The benefit of PaaS is that "A PaaS provider hosts the hardware and software on its own infrastructure" [3]. The advantage of that is you will not have to run in-house hardware and software. The disadvantage is that you can't replace the entire company with what is just accessed over the web, and this can then be delivered over the public, private or with a hybrid. Overall, I think the best approach is the IaaS as this could replace your entire system and it is cheap to run also you will get storage and networking from it along with the hypervisor. Also, with the IaaS you will be able to control more of the company as with the SaaS you will just have to log in with someone else's system and with that, you won't get much control. On the other hand, the SaaS does manage the applications workload with the company also it is expensive to set up.

In the case where you have a big budget and no cost limit, you could choose the on-premises as you will have no loss of service and you will get to control everything for yourself so you will not get lots of restrictions as you will own all. If you were to use the other services, they will be provided by other companies so they will have restrictions and you will not own the networking and the virtualisation. If I was to have a medium budget, I would go with the IaaS as you will lose some of the services like the networking and the storage side of it but will be able to have the O/S, middleware, and runtime so you will have more control than the other services like the SaaS and the PaaS. I chose the IaaS as you only have a medium budget, so you only get a certain amount of money to spend so you don't waste too much money. The only loss of service is the virtualisation, servers, networking, and storage as these will be the most expensive part of the whole system and you must try and keep the price down. You would also have to pay for more staff as well so that is why I have chosen it.

Authorisation and Authentication

The difference between authorisation and authentication is that they refer to different things as authorisation refers to the identity of the user this could be for a website as you will need a username and password when you log in. Authentication is when you tell the user what he can and can't do on the website or application as you can stop them from going into files and different parts of the website you don't want the user going into.

Security

The term MFA stands for multi-factor Authentication. More and more websites and companies are using this for security reasons as it is much harder for the hacker to try and get into your account when you want to get into an account you will first have to put in your username and password then you will have to enter a pin from another device so they know it is harder for the hacker to get hold of two devices then you will have to either do a verification for your finger or face as most modern phones now have one of them. This is what MFA is as it is a better solution than just a password. The least-privilege permissions are when you permit a user what they only need to accomplish their job when staff have too much access, they can start to wonder what they are paid to do so this will stop them

from doing that. This is never useful to have when you have a lot of people in your workplace as you will not be able to control all the stuff you have. The network security group is one of the most important software that you could use to protect your VM as this will control the traffic coming in and out of the VM. This is a virtual firewall, and it will filter the traffic through the network layer it can analyse 3 different levels of traffic L3, L4 and L7. The bastions or sometimes referred to as a jump box. This will act like a proxy server to help connect clients to the remote server. This is the main access to reach a private network this will allow you to have only internal IP addresses. It will allow the user to have a seamless experience of just SSH to access the VM without being exposed to a lot of public IP addresses.

Reference

[1]

B. Michelle, "Mrs."

<https://www.techtarget.com/searchcloudcomputing/definition/Infrastructure-as-a-Service-iaaS>.

[2]

C. Wesley, "MR." <https://www.techtarget.com/searchcloudcomputing/definition/Software-as-a-Service>.

[3]

C. Wesley, "MR." <https://www.techtarget.com/searchcloudcomputing/definition/Platform-as-a-Service-PaaS>.

FINAL GRADE

55 / 100

GENERAL COMMENTS

Instructor

Virtualization/VM: 15

Cloud Services: 17

Availability: 6

Security: 17

Feedback:

++++++

I was hoping for more discussion of virtualisation and VM components.

The cloud services discussion needed a little more focus on the support and expertise issues.

Even if you have a high budget we do not want to waste it. The primary motivation for moving to the cloud is to save infrastructure costs, so your argument is interesting but not correct.

PAGE 1

PAGE 2

PAGE 3

PAGE 4

PAGE 5

PAGE 6
