## **Homework File: Cloud Security**

### **Part 1**

1. What are 3 common job roles that combine security and cloud skills?
2. **A Cloud Security Professional helps the management of the company, organizations, or their own cloud security.**
3. **Cloud Architects have more than a decade in the field to help a company or organization build their cloud infrastructure front to back.**
4. **A Digital Skills Officer is an expert specializing in learning and development (L&D). They tend to help train and support companies with cloud skill gaps.**
5. What are the 3 biggest cloud provider platforms?
6. **Google Cloud**
7. **Amazon Web Services**
8. **Microsoft Azure**
9. What are the 6 most common cloud services (and their acronyms)?
10. **IaaS - Infrastructure as a Service**
11. **PaaS - Platform as a Service**
12. **CaaS - Communications as a Service**
13. **DaaS / DBaaS - Data as a Service / Database as a Service**
14. **Saas - Software as a Service**
15. **XaaS - Anything as a Service**
16. What is the difference between a virtual network and a physical network?

**A virtual network runs in the cloud. It follows the same rules as a physical network for VLANS and subletting. They can be spun up in a matter of minutes whenever needed. Because it is virtual if there is a problem within the network. It can be maintained from any off location of the main site, and that is important because of its flexibility. They have been proven to be more reliable because you can spin up more than one network without having to run live machines and wires.**

1. What is the point of setting your first firewall rule to block *all* traffic?

**It makes the most sense to block all traffic for quality control. Making it easier to set the rules to only allow what kind of traffic you want. In the end, you can configure what services are needed.**

1. What is the difference between physical computing components (CPU, RAM, HDD/SSD) and virtual computing components?

**A physical computing component such as the CPU, RAM, and or HDD/SDD can physically fail for any real reasons such as age, power spurts, or incorrect configuration. On the other hand, virtual computers components are run in the cloud by software and set up to what you specifically need to run in the cloud. It is much more flexible to run.**

1. What is the purpose of using an encrypted ssh key to connect to a machine?

**The purpose of using Secure Shell (SSH) is to have tighter security when you use a command-line interface from one computer to another. You are not leaving yourself open to having your commands modified or stolen. The SSH key is encrypted and becomes virtually impossible to crack as if you used a basic password without encryption.**

1. What is the difference between a container and a virtual machine?

**The virtual machine can be set up to run more heavy processes. They use more of the virtual computer components to run their resources and processes. A container is a lite version of the virtual machine. It will share resources from the host virtual machine. That means it only takes the minimum files it needs to run whichever program is intended. The great thing is that you can run both at the same time with multiple containers.**

1. What is meant by Infrastructure as Code?

**IaC (Infracture as Code) is a way of** **managing and creating all of your network and virtual equipment by code. It makes use of a virtual machine and all of its containers to be easy, and simple to set up in a few minutes. It takes too much time and can be very expensive to deploy the infrastructure physically. For example, the deployment can take hours, days, weeks, and or months when deploying a physical network. By designing and deploying the Infracture as an IaC, many of the issues that can come up can be fixed and or updated within minutes. This makes it much less expensive to fix issues without having to physically be there in person for all problems and fixes. For example, if there were any compromises to the network that can not be fixed. You can shut down or even delete it, and then redeploy the network with updated patches and or other moderate changes.**

1. What is a provisioner? Provide 3 examples of common provisioning software.

**Provisioner is a software application. Easy setup automation for installation, configuration, and management in deployment for IaC. Three of the most common provisioners are Ansible, Puppet, and Chef.**

1. What is Continuous Integration/Continuous Deployment?

**Continuous Integration / Continuous Deployment (CI/CD) is when there is any change to the IaC. Continuous Integration (CI) is automatically updating. It keeps all computers and machines on the network up to date.** **The Continuous Deployment (CD) will make sure that the newest version is always deployed live.** **It has the advantage of allowing you to update the IaC by using just text files.**

1. What is a VPN and when should we use one?

**A VPN (Virtual Private Network) is a way to be online securely and privately while using your device and or network. It uses encryption for all your network traffic. It helps you from being snooped on, interference, and being censored. For example, a VPN should always be used when you work remotely with any data that is sensitive or not.**

1. What is the purpose of a load balancer?

**The purpose of a load balancer is to provide distribution of network traffic to multiple servers. So that not one server gets overloaded by the network traffic.** **This in return helps the responsiveness of the application and also mitigates any DoS attacks.**

1. What is a resource group in Azure?

**An Azure resource group is a container that has all resources needed to set up for a project. It usually consists of the network, firewalls, virtual computers related to the Azure project. The allocation of resource groups can be managed on what is the need to need basis. The resource group can be deployed, updated, and deleted when needed.**

1. What is Region in Azure?

**An Azure region is a data center that is a physical building that is running its own live servers, with its own power, cooling, and infrastructure. They share cloud resources with each other. The Regions are named by geographical location, US-East, US-West, etc. There are a total of 58 Azure region centers around the world. They are in close proximity to one another. The reason this is done this way is to help avoid network latency. https://www.pragimtech.com/blog/azure/azure-regions-and-paired-regions/**