

Congratulations! You have finished the cloud security portion of the course.

Your homework assignment will be 2 parts:

Part 1

Cloud computing has many terms and definitions that are unique to the cloud. As such, it is important to understand and remember this jargon when speaking to potential employers or peers.

In part 1 of the homework, our goal is to solidify many of the terms and concepts you have learned throughout the last 4 weeks of class.

Instructions

Answer the following questions in your own words:

1. What are 3 common job roles that combine security and cloud skills?
 - a. Cloud security analyst
 - b. Cloud penetration testers
 - c. Cloud architect
2. What are the 3 biggest cloud provider platforms?
 - a. Amazon (AWS)
 - b. Microsoft (Azure)
 - c. Google cloud
3. What are the 6 most common cloud services (and their acronyms)?
 - a. IaaS - Infrastructure as a Service
 - b. PaaS - Platform as a Service
 - c. SaaS - Software as a Service
 - d. DaaS - Data as a Service
 - e. DBaaS - Database as a Service
 - f. CaaS - Communications as a Service
 - g. XaaS - Anything as a Service
4. What is the difference between a virtual network and a physical network?
 - a. Virtual networks have all the components of a physical network but can be scaled easily and “spun” up very quickly.
5. What is the point of setting your first firewall rule to block *all* traffic?
 - a. To make sure no one can get into the network before we have it configured the way it needs to be

6. What is the difference between physical computing components (CPU, RAM, HDD/SSD) and virtual computing components?
 - a. With physical components, you have finite space to grow or increase but with virtual, you can easily add more and then of course create new machines with more space.
7. What is the purpose of using an encrypted ssh key to connect to a machine?
 - a. It encrypts connections between two network endpoints to increase the security
8. What is the difference between a container and a virtual machine?
 - a. Containers are "lightweight" VMs. They use fewer resources and can be more easily destroyed and redeployed. They can only do one thing though and are specialized for a task whereas VMs can do many things.
9. What is a provisioner? Provide 3 examples of common provisioning software.
 - a. A tool that automatically configures a VM or container as opposed to having to manually configure it. This is useful when large companies have to set up hundreds/thousands of machines. Eliminates human error when configuring.
 - b. Ansible
 - c. Puppet
 - d. Chef
10. What is meant by Infrastructure as Code?
 - a. Using code, you can easily start a piece of infrastructure quickly. It is a way of defining each piece of infrastructure individually
11. What is Continuous Integration/Continuous Deployment?
 - a. It is an automated process of updating a machine and then deploying that machine into your live environment once a change is made to the code (ie. updating the IaC file).
12. What is a VPN and when should we use one?
 - a. Virtual private network - creates a direct connection between your local network and a remote network. It allows employees to access the company network while working remotely and secures the data with encryption.
13. What is the purpose of a load balancer?
 - a. Distributes traffic across servers to make sure individual servers are not overworked. Frees up space to increase efficiency
14. What is a resource group in Azure?
 - a. A location for specific resources used for setup or projects that allow the engineers to access/locate more easily.
15. What is Region in Azure?

- a. Where a datacenter is located so that it mitigates latency. For example, if someone on the east coast is using a west coast region, they may experience latency due to having the resources on the other side of the country as opposed to the same coast they are on.

Part 2

Background

- During the last week, you created a highly available web server for XCorp's Red Team to use for testing and training.
- Your lead cloud administrator has asked for a diagram of the Network you created to keep for documentation and company records.
- Your task: Use draw.io to create a detailed diagram of your cloud infrastructure.

Cloud Recap

When you're finished completing all the activities in cloud week, you should have:

- A total of 3 VMs running DVWA.
- All 3 VMs receiving traffic from your load balancer.

Your Goal

When you are finished with this assignment, you should have a network diagram that shows your entire cloud setup, including your Ansible jump box and the Docker containers running on each VM.

This document can be used as part of a portfolio to demonstrate your ability.

Instructions

Use a free account at draw.io to diagram the entire cloud network you have created.

- Your diagram should show the following:
 - Azure resource group
 - Virtual network with IP address range
 - Subnet range
 - Flow of specific traffic (e.g., HTTP, SSH)

- Security group blocking traffic
- Load balancer
- All 4 VMs that you have launched
- Where Docker and Ansible are deployed

