ACS730 Final Project

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# **Traffic Flow:**

## A diagram of a network Description automatically generated

## **Blue Flow:**

In this network configuration, the blue traffic flow is primarily driven by two distinct triggers, each serving a specific purpose. Firstly, HTTP traffic plays a crucial role in enabling users to access the hosted webpage. This accessibility is facilitated by any user utilizing the web server's public IP address over port 80. This provides a straightforward means for individuals to interact with the webpage, contributing to the overall traffic on the network.

The second traffic trigger involves the administration of the network. Specifically, the administrator (in this case, the ec2-user) engages with the virtual machine through SSH (Secure Shell) via port 22. This secure communication protocol allows the administrator to remotely access and manage the virtual machine, ensuring efficient administration and control over the network infrastructure.

Every web server housed within the public subnet is set up to receive SSH connections from the internet. Administrators have the freedom to safely connect to these servers for upkeep or troubleshooting thanks to this design decision.

Moreover, the network architecture incorporates a security measure by using a designated Bastion server, represented by Webserver2. Acting as a gateway, Webserver2 allows secure access to the virtual machines (VM5 and VM6) hosted in the private subnets. Notably, VM5 and VM6 have restricted accessibility, only accepting traffic from Webserver2. This access control enhances the security posture of the private subnets, limiting direct external access to the virtual machines and ensuring that communication is channeled through the designated Bastion server.

## **Red Flow:**

For the red flow, we use cloud 9 and install ansible to serve as Control Host. From there, traffic is triggered once the ansible playbook is run and connect to Webserver3 and Webserver4 via SSH and install httpd service and update other installed packages. The HTTP traffic can be triggered by any users when connecting to webpage hosted in webserver3 and webserver 4 via port 80.

# **Challenges faced during implementation:**

* Operation in Github

Due to time constraints, the group has encountered challenges in navigating GitHub efficiently. In order to address this issue, we have implemented a strategic solution by introducing a staging branch. This allows us to engage in hands-on exploration, gaining a deeper understanding of the tool's functionalities and features. By actively experimenting with the staging branch, team members can familiarize themselves with GitHub's interface, version control mechanisms, and collaborative workflows. This proactive approach not only enhances our proficiency in utilizing GitHub but also promotes a more streamlined and effective development process. As a result, team members can navigate the platform with greater ease, contributing to improved productivity and collaboration within the project.

* Implementing Ansible and Terraform at the same time

Integrating Terraform and Ansible modules posed challenges due to their development by different group members. The conflict in coding styles created compatibility issues, hindering seamless integration. To address this, we prioritized open communication and documentation, ensuring each module's functionalities, inputs, and outputs were clearly defined. Standardized interfaces and version control were implemented to streamline collaboration, while regular peer reviews helped align development approaches. By fostering cross-functional knowledge sharing and emphasizing modular design, we aimed to overcome integration difficulties, enhancing coordination and cohesion among team members working on diverse features within our project.

# **Mapping of Github Users**

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| --- | --- |
| **Student Name** | **Github ID** |
| Augustine Opoku Junior Antwi | thecyberdev |
| Rose Ann Camantes | mdnsramos |
| Michael Concepcion | michaellainey |
| Daphne Denis Ramos | rosecamanates |
| Jonalyn Ulloa | jonaulloa |