IT Department
Faculty of Prince Al-Hussein Bin Abdallah II for Information Technology
Hashemite University, Zarqa, Jordan
Course: Cloud Computing Security (IT2010043452)
Spring 2024/2025
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Project: Configuring and Testing Access Control Lists (ACLs) in Virtual Private Cloud (VPC) using GNS3

Teamwork Project: Each team consists of four students, and the team will receive a shared grade based on their collective performance.

- *Deadline of submission:* ***18-22/5/2025***

The goal of this assignment is to configure and test ACLs in a GNS3 network https://www.gns3.com/ to enforce specific traffic restrictions between network tiers. You will also determine whether the ACL should be applied inbound or outbound to meet the requirements.

Scenario:

You are tasked with securing a three-tier network consisting of:

1. Web Tier: Subnet 192.168.0.0/24
2. Application Tier: Subnet 192.168.1.0/24
3. Database Tier: Subnet 192.168.2.0/24

Each tier has specific traffic rules that must be implemented using ACLs on the routers.

Requirements:

1. Web Tier (192.168.0.0/24)
    - Accepts only HTTP (port 80) and HTTPS (port 443) traffic.
    - Denies all other types of traffic.
2. Application Tier (192.168.1.0/24)
    - Accepts traffic from the Web Tier on port 8080.
    - Accepts traffic from the Database Tier on port 3306.
    - Denies all other traffic.
3. Database Tier (192.168.2.0/24)
    - Restricts access to only the Application Tier on port 3306.
    - Denies all outbound traffic.

Steps:

1. Install and Configure GNS3 and Network Setup
    - Download and install GNS3- Visit the GNS3 website and download the appropriate version for your operating system.
    - Create a three-tier network in GNS3 using routers and switches.
    - Assign IP addresses to each router interface according to the subnets provided.
    - Configure routing to enable basic communication between all tiers.
2. Implement ACLs
    - Write the ACL rules to enforce the traffic requirements for each tier.
    - Decide whether each ACL should be applied inbound or outbound on the relevant router interface(s).
    - Apply the ACLs on the appropriate interfaces.
3. Test the ACLs
    - Use ping and/or telnet/HTTP tools to test traffic between the tiers.
    - Verify that traffic is allowed or denied as specified in the requirements.

Marks Distribution

- **(5 marks)** Step 1: Install and Configure GNS3 and Network Setup
- **(10 marks)** Step 2: Implement ACLs
- **(5 marks)** Step 3: Testing the ACLs