Git Pages Lab Report

Sandbox Network

Configuration Overview

To set up the project environment, you need to configure three virtual machines (VMs) using VirtualBox. Below is the list of required software and operating system (OS) files:

Required Software and Files

1. **VirtualBox**: Download and install the VirtualBox application on your PC.
2. **Operating System Files**:
    - Ubuntu Desktop (.iso format) or another desktop OS (e.g., Kali Linux, Windows).
    - Ubuntu Server (.iso format).
    - Bitnami WordPress Application Server (.ova format).

Setup Steps

1. Install VirtualBox.
2. Add all three OS images to VirtualBox.
3. Follow the specific configuration steps for each VM as outlined below.

Ubuntu Server Configuration

Step 1: Create a New Virtual Machine (VM)

1. Open VirtualBox.
2. Click **New** to create a new VM.
3. Set the following configurations:
    - **Name**: Ubuntu Server.
    - **Type**: Linux.
    - **Version**: Ubuntu (64-bit).
    - **Memory (RAM)**: Allocate at least 2048 MB (adjust based on system capacity).
    - **Hard Disk**: Create a virtual hard disk with a minimum size of 10 GB.
4. Click **Create** to finalize the VM setup.

Step 2: Configure Network Interfaces

1. Open the VM **Settings** > **Network**.
2. Configure three adapters:
    - **Adapter 1**: Set to *Internal Network* (e.g., intnet) for Subnet 1.

- **Adapter 2**: Set to another *Internal Network* (e.g., intnet1) for Subnet 2.
- **Adapter 3**: Set to NAT for internet access.

3. Set the adapter types to *PCnet-FAST III* or a supported alternative.

Step 3: Install Ubuntu Server

1. Start the VM and select the Ubuntu Server ISO as the boot disk.
2. Complete the installation:
   - Set the time zone, keyboard layout, and other preferences.
   - Create a user account with a strong password.
   - Install the OpenSSH Server when prompted.
3. Reboot the VM after the installation.

Step 4: Configure Static IP Addresses

1. Log in to the Ubuntu Server VM.
2. Edit the network configuration file:

   sudo nano /etc/netplan/00-installer-config.yaml
3. Define static IPs for the interfaces, ensuring each belongs to a different subnet.
4. Apply the changes:

   sudo netplan apply

   ip a

Step 5: Enable IP Forwarding

1. Open the sysctl configuration file:

   sudo nano /etc/sysctl.conf
2. Uncomment or add the following line:

   net.ipv4.ip_forward=1
3. Apply the changes:

   sudo sysctl -p

Step 6: Configure IPTables for Routing

1. Enable packet forwarding between subnets:

   sudo iptables -A FORWARD -i enp0s3 -o enp0s8 -j ACCEPT

   sudo iptables -A FORWARD -i enp0s8 -o enp0s3 -j ACCEPT
2. Save and reload the IPTables configuration:

   sudo apt install iptables-persistent

   sudo netfilter-persistent save

   sudo netfilter-persistent reload

Ubuntu Desktop Configuration

Step 1: Create a Virtual Machine for Ubuntu Desktop

1. Open VirtualBox and click **New**.
2. Set the following configurations:
    - **Name**: Ubuntu Desktop.
    - **Memory**: Allocate 2048 MB.
    - **Processor**: Assign two processors.
    - **Hard Disk**: Create a virtual hard disk with at least 25 GB.
3. Select the Ubuntu Desktop ISO and disable the "Unattended Installation" checkbox.
4. Boot the VM and follow the installation prompts to complete setup.

Step 2: Configure Network Interfaces

1. Open the VM **Settings** > **Network**.
    - Set **Adapter 1** to *Internal Network* (e.g., intnet).
2. In the Ubuntu Desktop environment:
    - Go to **Settings** > **Network**.
    - Set a static IP configuration:
        - Address: 192.168.15.2
        - Netmask: 255.255.255.0
        - Gateway: 192.168.15.1
    - Apply and reconnect the network.

Bitnami WordPress Application Server Configuration

Step 1: Import Bitnami OVA File

1. Open VirtualBox and click **File** > **Import Appliance**.
2. Select the Bitnami OVA file and complete the import process.
3. Start the VM and follow the on-screen instructions to reset the password.

Step 2: Configure Network Interfaces

1. Open the VM **Settings** > **Network**.
    - Set **Adapter 1** to *Internal Network* (e.g., intnet1).
2. Log in to the Bitnami VM and configure the network:

    sudo nano /etc/network/interfaces

3. Update the file with static IP details:

auto enp0s3

iface enp0s3 inet static

address 192.168.115.2

netmask 255.255.255.0

gateway 192.168.115.1

4. Restart networking:

   sudo ifdown enp0s3 && sudo ifup enp0s3

   sudo systemctl restart networking

   ip a

Checking Results:

Go to Ubuntu desktop:

ping 192.168.15.1

ping 192.168.115.2

Go to Ubuntu server:

ping 192.168.15.2

ping 192.168.115.2

Go to Bitnami:

ping 192.168.115.1

ping 192.168.15.2

You can see the result execution video from link below:

https://www.loom.com/share/70983939fb7d41e2a7d5317f0f8afc0b?sid=2eddc357-a426-4a6b-a03c-a974f704bbb3