**Week 2: Network Commands & Tools**

**Objective:** Learn essential networking commands and tools.

**Task#02: Set up a basic local area network (LAN) using at least two devices or virtual machines.**

**Solution:**

**Setting Up a LAN with Your Local Laptop (Host) and One Kali Linux VM in VMware Workstation**

**Scenario:**

Your Host Machine and the Kali Linux VM will communicate directly on an isolated virtual network managed by VMware.

**Prerequisites:**

1. **VMware Workstation Player (Free for personal use) or Workstation Pro (Paid):** Download and install from VMware's official website.
2. **Kali Linux VM Created and Installed:** You should have one Kali Linux VM already set up in VMware Workstation.

**Steps:**

**Part 1: Configure the Kali VM's Network Adapter in VMware**

1. **Shut Down Your Kali VM:** Ensure your Kali VM is fully powered off (not just suspended).
2. **Access VM Settings:**
   * Open VMware Workstation.
   * Select your Kali Linux VM from the "Home" screen or the left pane.
   * Click **"Edit virtual machine settings"** (or right-click the VM and choose "Settings...").
3. **Go to Network Adapter Settings:**
   * In the "Virtual Machine Settings" window, select **"Network Adapter"** from the left pane.
4. **Choose "Host-only" Mode:**
   * On the right side, select the radio button for **"Host-only (VMnet1)"**. This option creates a private network that connects your VM to the host system only.
   * Ensure "Connect at power on" is checked.
5. **Click "OK"** to save the network settings.

**Part 2: Identify Host-Only Network Details on Your Laptop (Host)**

VMware Workstation automatically creates a virtual network adapter on your host machine for Host-only networking (VMnet1). You need to find its IP address and subnet mask.

1. **Check VMware's Virtual Network Editor:**
   * In VMware Workstation, go to Edit menu > Virtual Network Editor....
   * You might need to click "Change Settings" if prompted, to make changes as administrator.
   * Look for **VMnet1** (Host-only).
   * Note down its **Subnet IP** (e.g., 192.168.X.0) and **Subnet Mask** (e.g., 255.255.255.0). Also, note the "Host Virtual Network Adapter IP address" shown for VMnet1 (this is your host's IP on this private network).
   * **Example:** Often VMnet1 is 192.168.200.0 with host IP 192.168.200.1 and subnet 255.255.255.0.
2. **Verify Host Adapter IP (via Command Prompt/Terminal on Host):**
   * **Windows:** Open Command Prompt (cmd) and type ipconfig. Look for "VMware Network Adapter VMnet1" and note its "IPv4 Address."
   * **macOS/Linux:** Open Terminal and type ifconfig or ip a. Look for an adapter like vmnet1 and note its IP.

**Part 3: Configure Static IP Address within the Kali Linux VM**

You'll assign an IP address to your Kali VM that is on the *same subnet* as your host's VMnet1 adapter, but is unique.

1. **Start Your Kali VM:** Power on your Kali Linux VM.
2. **Log into Kali Linux.**
3. **Configure Network Settings (Graphical Method - Recommended):**
   * Click on the **Network Manager icon** in the top right corner (usually two arrows or Wi-Fi bars).
   * Select "Wired Connected" (or whatever your Ethernet adapter is named, e.g., eth0).
   * Click **"Wired Settings"**.
   * Click the **gear icon** next to your active wired connection profile.
   * Go to the **"IPv4" tab**.
   * Change "IPv4 Method" to **"Manual"**.
   * Under "Addresses", click **"+Add"**.
     + **Address:** 192.168.200.10 (Choose any unused IP in the 192.168.200.X range, except 192.168.200.1 which is your host).
     + **Netmask:** 255.255.255.0 (This *must* match your host's VMnet1 subnet mask).
     + **Gateway:** (Leave blank for this basic setup, as there's no router for internet access on this specific network segment).
     + **DNS:** (Leave blank, as this network doesn't directly provide internet DNS).
   * Click **"Apply"** in the top right.
   * Turn the network adapter **OFF** then **ON** using the toggle to apply changes immediately.

**Part 4: Test Connectivity**

Now, test if your host and Kali VM can communicate.

1. **From your Kali Linux VM:**
   * Open a terminal.
   * **Ping your Host Machine:**

Bash

ping 192.168.200.1

(Replace 192.168.200.1 with your actual host's VMnet1 IP from Part 2).

* + You should see successful replies (e.g., 64 bytes from 192.168.200.1: icmp\_seq=1 ttl=64 time=0.X ms). Press Ctrl+C to stop.

1. **From your Local Laptop (Host Machine):**
   * Open Command Prompt (Windows) or Terminal (macOS/Linux).
   * **Ping your Kali VM:**

Bash

ping 192.168.200.10

(Replace 192.168.200.10 with the IP you assigned to your Kali VM in Part 3).

* + You should also see successful replies.

If both pings are successful, your basic LAN between your local laptop and your Kali Linux VM is established!

**Common Troubleshooting Tips:**

* **Firewall:** Ensure Windows Firewall on your host (and ufw on Kali) is not blocking ICMP (ping) traffic. For testing, you might temporarily disable them on both, but remember to re-enable them.
  + **Kali Linux:** sudo ufw disable (re-enable with sudo ufw enable)
* **IP Address/Subnet Mask:** Double-check that the IP address you set in Kali is *unique* and on the *exact same subnet* as your host's VMnet1 adapter.
* **Restart VMs:** Sometimes a full power cycle of the VM helps apply network changes.