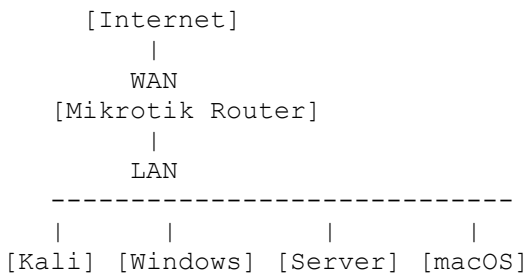
Virtual Lab Network Setup with Mikrotik Router on VMware

This project demonstrates how to build a secure, virtualized network environment using VMware and a Mikrotik virtual router. It enables isolated communication between multiple VMs (Kali, Windows, Windows Server, macOS) while still allowing internet access, effectively simulating a small enterprise network.

Visual Overview



Key Features

- **Mikrotik Router** serves as the gateway for all VM traffic.
- **DHCP Server** dynamically assigns IP addresses to VMs.
- **NAT Configuration** allows internet access through Mikrotik.
- **Internal Network** isolates VMs from the host while enabling internal communication.

Tools Used

- **VMware Workstation**
- **Mikrotik CHR OVA File**
  [Download Mikrotik OVA (7.18.2)]

Step-by-Step Setup

1. Deploy Mikrotik Router VM

- Open VMware → `File` → `Open` → Select downloaded `.ova`
- Name the VM & choose install location.
- Default login:
  - **Username:** `admin`
  - **Password:** *(blank)*
- On first login, change the password.
- Check interfaces:

```
/interface print
```

2. Add Network Adapters to Mikrotik VM

- Shut down Mikrotik VM.
- Go to `VM Settings` → `Add` → `Network Adapter`.
- Select:
  - **Network Type:** `Custom (VMnet2)` → for internal LAN
  - **Network Adapter 1:** `Bridged` → connects to host's physical network (WAN)
- Save and restart VM.

3. Configure Mikrotik Interfaces

- Power on Mikrotik.
- Confirm interfaces:

```
/interface print
```

- Assign IP to LAN (ether2):

```
/ip address add address=192.168.10.1/24 interface=ether2
```

- Set WAN (ether1) to DHCP:

```
/ip dhcp-client add interface=ether1 disabled=no
```

4. Set Up DHCP Server on LAN

```
/ip dhcp-server setup
```

- When prompted, select `ether2` as the interface.
- Follow the prompts to complete setup.

5. Enable NAT for Internet Access

```
/ip firewall nat add chain=srcnat out-interface=ether1 action=masquerade
```

VM Configuration

- Each VM (Kali, Windows, etc.) should:
  - Use **Custom (VMnet2)** as the network adapter in VMware.
  - Be configured for **automatic IP (DHCP)** inside the OS.

Testing & Validation

- Ping the Mikrotik router from each VM:

```
ping 192.168.10.1
```

- Verify communication between VMs.
- Check internet access:

```
ping google.com
```

Notes

- Additional interfaces can be added to Mikrotik for VLANs or segmented networks.
- This topology can be extended for more advanced simulations (firewalls, IDS/IPS, etc.)
- Perfect for creating an **offline lab** or practicing **network segmentation, routing, and firewall rules**.

Use Case

This lab setup is ideal for:

- Practicing cybersecurity operations.
- Building and testing network policies.
- Running red/blue team simulations in a safe environment.