

CSC458/2209 - Computer Networking Systems

Mininet Virtual Machine Setup Guide

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1 Introduction

In the assignments, you will be using Mininet, which is a technology that emulates real network set up which you can learn more at <https://mininet.org>. To make the set up easier, we have created a set of VMs that have Mininet pre-installed.

2 VM images on Virtual Box

- **VirtualBox:** Download and install [VirtualBox](#), a virtualization platform. VirtualBox is available on Linux, Windows, and MacOS. However if your computer has Apple M chips, it's recommended to use UTM for a better user experience.
- **VM images**
 - x86: <https://github.com/yganjali/csc458-pa-fall-2025/releases/download/1.0.0/mininet-vm-virtualbox-x86.zip>
 - ARM64: <https://github.com/yganjali/csc458-pa-fall-2025/releases/download/1.0.0/mininet-vm-virtualbox-arm64.zip>
- **Import VMs:** On VirtualBox, go to File → Import Appliance and select the .ova file you just downloaded. Follow the steps to create your VM.
- **Port Forwarding:** To avoid using the VirtualBox VMs interface for working with Mininet, set up port forwarding on your VM instance. With port forwarding, you can expose port 22 inside the VM instance (listened to by the OpenSSH server) in your host machine. To do this, click on your newly imported VM, and click on Settings > Network > Advanced > Port Forwarding. In the new window, add a rule to forward port 22 on the Guest to port 2222 on the Host, with TCP protocol. The IP fields can remain empty.
- **Start VM:** Power on your VM and wait for the guest OS to boot, until you see the login page.

3 VM images on UTM

- For macOS users with Apple Silicon, we recommend [UTM](#), which provides better user experience than VirtualBox.
- Install the UTM virtual machine software
- **VM images**

- ARM64: <https://github.com/yganjali/csc458-pa-fall-2025/releases/download/1.0.0/mininet-vm-utm-arm64.zip>
- Import VM by drag and drop or opening the .utm file
- Ensure that the VM has **Network** → **Emulated VLAN** → **Port Forwarding** enabled for SSH access. Forward:
 - **Host Port:** 2222
 - **Guest Port:** 22

Connecting to the VM

Once the VM is running, connect from your host machine:

```
1 ssh -p 2222 mininet@localhost
```

- **Username:** mininet
- **Password:** mininet

Next Steps

Once connected, you can:

- Run basic Mininet commands (e.g., `sudo mn --test pingall`) to confirm everything works.
- Begin working on the assignment instructions provided separately.

Notes

- Working inside the VM through a terminal is fine, but using **Visual Studio Code's Remote - SSH extension** can make development much easier. It allows you to edit files directly in the VM as if they were on your local machine. Complete tutorial can be found on <https://code.visualstudio.com/docs/remote/ssh>.
 - When connecting to the host, first configure by selecting "Add new SSH Host..." and enter the command used for ssh `ssh -p 2222 mininet@localhost`, then you are able to connect to the configured host by following the tutorial.
- **VMs are not a reliable place to keep your ongoing work.** Backup your work on a remote version control system (e.g., git), or through other methods, you are comfortable with.