



THURSDAY – DAY 4

Installing Oracle VirtualBox & Setting Up Your Home Lab

A step-by-step facilitator and student guide

Facilitator Teaching Guide – Cybersecurity Track, Week 1
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1. Learning Objectives

By the end of this session, students should have Oracle VirtualBox successfully installed on their own computer, and understand what a virtual machine is and why it forms the safe practice environment for the rest of the cybersecurity track.

2. Why We Use a Virtual Machine

A virtual machine (VM) is a software-based emulation of a computer that runs inside your real computer, completely isolated from it. Oracle VirtualBox is the free, industry-standard tool used to create and run these virtual machines. For a cybersecurity student, a VM matters for one critical reason: it gives you a safe, disposable environment to explore tools, examine malware behavior conceptually, and practice techniques without any risk of damaging your actual laptop or its files. If something goes wrong inside the VM, you simply delete it and start again.

3. Before You Begin: System Requirements

- At least 8GB of RAM on your host computer (4GB is technically possible but will be slow once a virtual machine is also running).
- At least 25 to 30GB of free disk space for the virtual machine and its operating system.
- A 64-bit processor with hardware virtualization support (Intel VT-x or AMD-V), standard on nearly all computers made in the last decade.
- Administrator access on your computer, required to install the software.

Important

Virtualization must be enabled in your computer's BIOS or UEFI settings. On most machines it is enabled by default, but if VirtualBox reports a virtualization error when you try to start a virtual machine later, you will need to restart your computer, enter the BIOS setup (commonly by pressing F2, F10, Del, or Esc during startup), and enable the setting usually labeled Intel Virtualization Technology, VT-x, or AMD-V/SVM Mode.

4. Step-by-Step: Downloading VirtualBox

1

Go to the official download page

Open your browser and go directly to [virtualbox.org/wiki/Downloads](https://www.virtualbox.org/wiki/Downloads). Always download from the official Oracle site, never from a third-party mirror, to avoid tampered installers.

2

Choose your operating system

You will see separate download links for Windows hosts, macOS (Intel and Apple Silicon are separate builds), and Linux distributions. Click the link matching your own computer's operating system.

3

Wait for the download

The installer file is typically 100 to 150 megabytes. Depending on your internet connection this may take a few minutes.

4

Locate the downloaded file

Once complete, find the installer in your Downloads folder. On Windows it will be a .exe file; on Mac it will be a .dmg file.

5. Step-by-Step: Installing on Windows

- Double-click the downloaded .exe file. If Windows shows a security prompt asking whether to allow the app to make changes, click Yes.
- The VirtualBox Setup Wizard opens. Click Next on the welcome screen.
- Keep the default components selected (VirtualBox USB support, networking, and Python support) unless you have a specific reason to change them, and click Next.
- You will see a warning that your network connection will be briefly reset during installation, this is normal and expected. Click Yes to continue.
- Click Install. Windows may show another permission prompt for installing device drivers required for virtual networking, click Install or Yes to approve it.
- Once installation finishes, leave the checkbox ticked to start VirtualBox immediately, and click Finish.

6. Step-by-Step: Installing on macOS

- Double-click the downloaded .dmg file to mount it. A window will open showing the VirtualBox.pkg installer icon.
- Double-click VirtualBox.pkg to launch the installer.
- Click Continue, then Continue again past the read-me and license screens, then Install.
- Enter your Mac's administrator password when prompted.
- macOS will likely block the installer's system extension the first time. Go to System Settings, then Privacy and Security, scroll down, and click Allow next to the message about software from Oracle America.
- You may need to restart your Mac for the security approval to take full effect. After restarting, open VirtualBox from your Applications folder.

7. Verifying the Installation

Once installed, open VirtualBox. You should see the VirtualBox Manager window, a mostly empty list (since no virtual machines have been created yet) with a toolbar at the top showing options like New, Add, Settings, and Start. If this window opens without an error message, the installation was successful.

Troubleshooting

If VirtualBox displays a virtualization or VT-x/AMD-V error message when you later try to start a virtual machine, it almost always means virtualization is disabled in the BIOS, or another hypervisor (such as Windows' own Hyper-V, or Windows Sandbox) is running and holding the CPU's virtualization feature. Disabling Hyper-V related Windows features, or restarting and enabling VT-x/AMD-V in the BIOS, resolves the vast majority of these cases.

8. What Comes Next (Friday)

With VirtualBox installed, Friday's session has students create their first actual virtual machine and install a guest operating system inside it, then take screenshots documenting the completed setup for submission. This home lab becomes the practice environment used throughout the rest of the twelve-week cybersecurity track, so a clean, careful installation today is worth the extra care.

9. Class Discussion Prompt

Ask students: now that you understand what a virtual machine is, can you think of a scenario, beyond this course, where running something in an isolated VM rather than directly on your main computer would be a smart safety practice?