

# Linux, day 1



# Lab prep

# What will you need?

- A semi-recent (5 years) laptop, or PC.
  - Intel i5/i7, AMD Zen2, Apple ARM
  - At least 8GB RAM
  - At least 50GB of storage space

# Apple ARM systems

- For Mac ARM systems, I suggest using UTM.
  - Next to ARM software, it also does x86\_64.
- Parallels / VMWare will only run ARM Linux.

See: <https://mac.getutm.app>

# Instructions before class

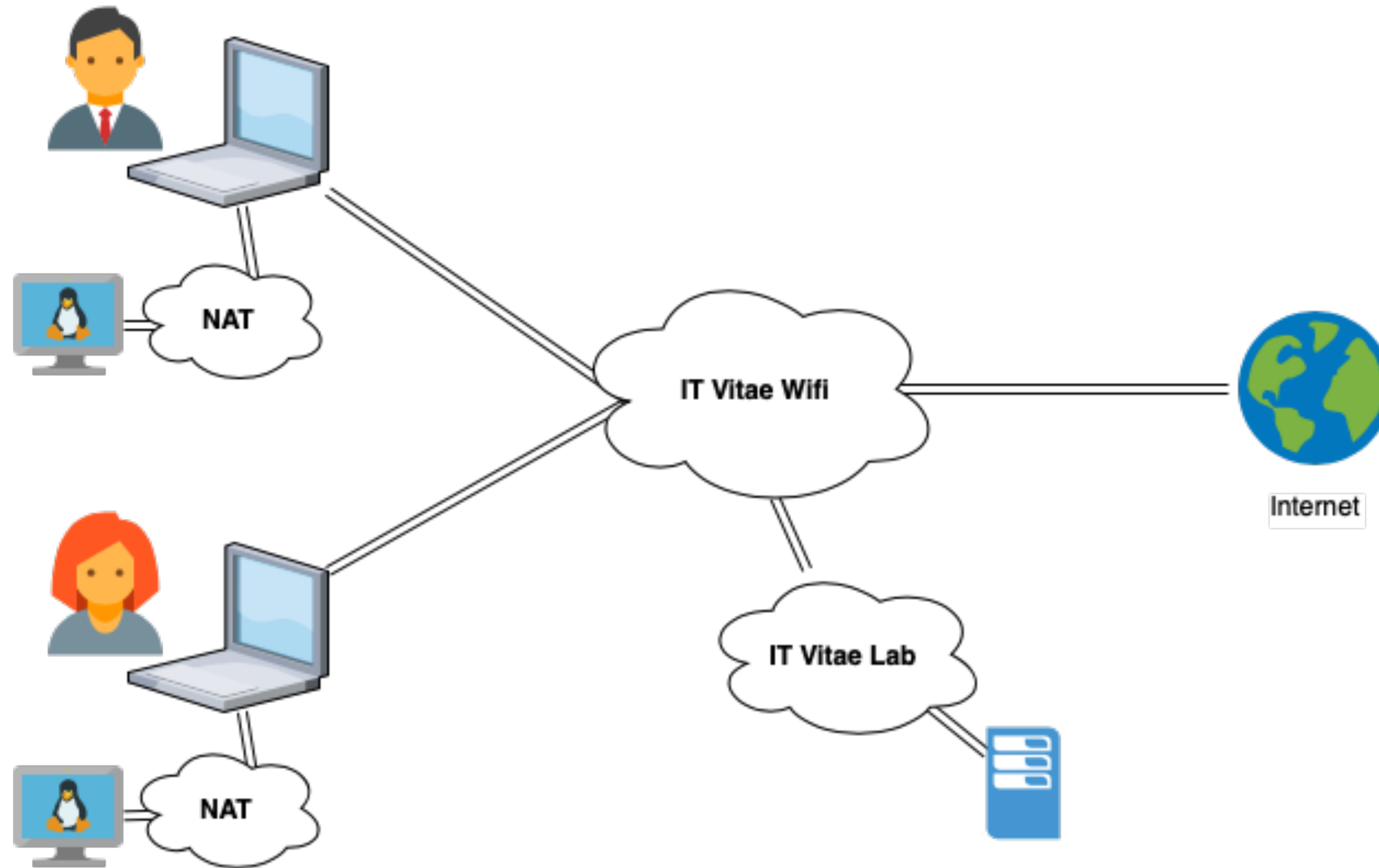
- My e-mail asked you to download:
  - VirtualBox installer (.exe or .dmg)
  - Fedora Workstation 37 (.iso)
  - Ubuntu Server 22.04 LTS (.iso)
- Apple ARM users need UTM, instead of VBox.
  - And ARM64 versions of Fedora and Ubuntu.

# Guided exercise: installation

# What will we do?

- Two "virtual machines" with Fedora and Ubuntu,
- Running in VirtualBox on our PC,
- Connected to a "NAT" network,
  - Which provides network/Internet access.
- Want RedHat Enterprise too? Check the homework!

# What will we make?





# Objectives

- Install VirtualBox
- Create a VM
- Install Fedora Workstation

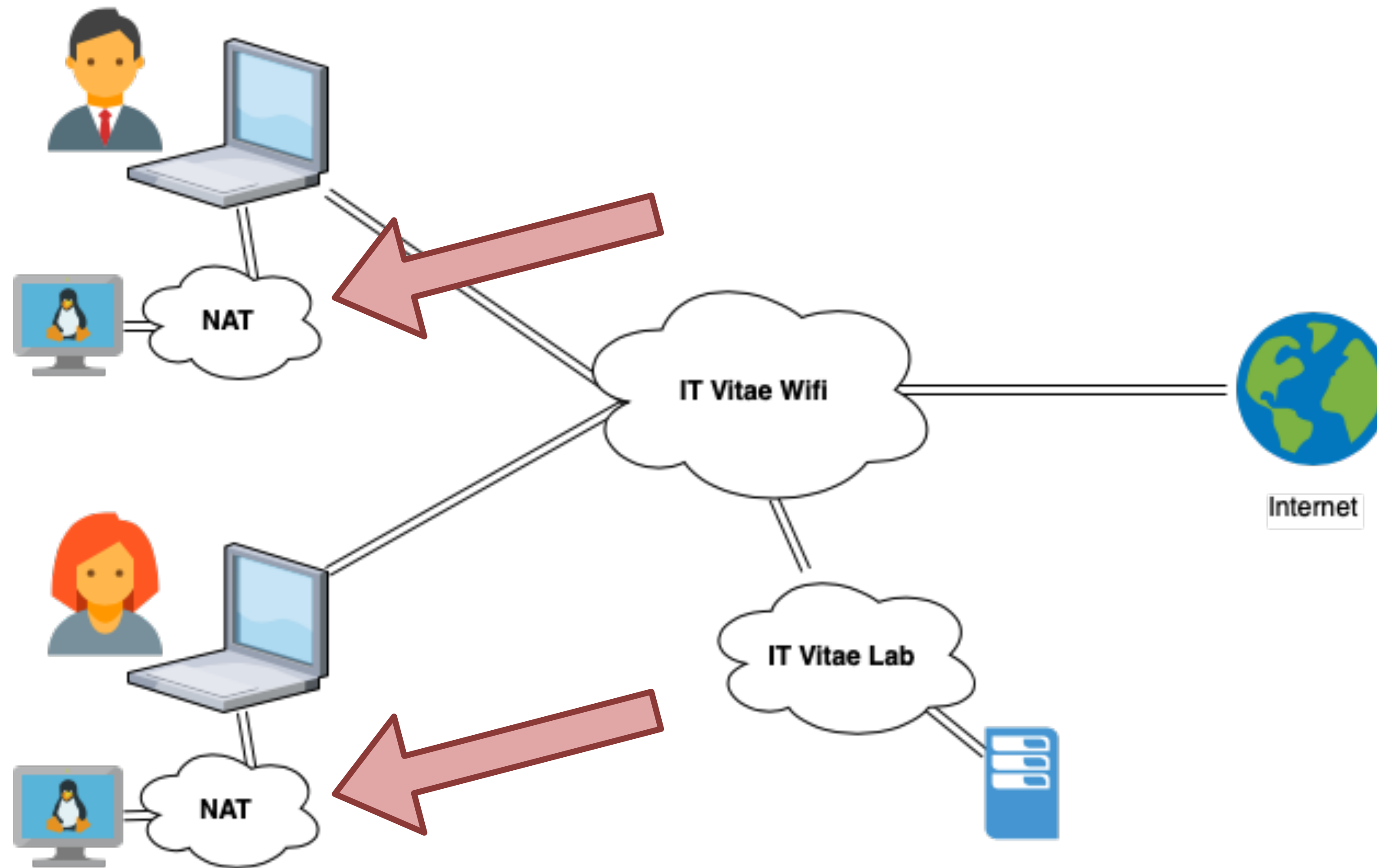
# Installing VirtualBox

- Windows? Just follow the wizard.
  - MacOS? Ditto!
  - Linux? Download the RPM or DEB and install.
- On MacOS, you need to allow VBox kernel modules.
  - System Preferences -> Gatekeeper -> Allow

# Windows power management

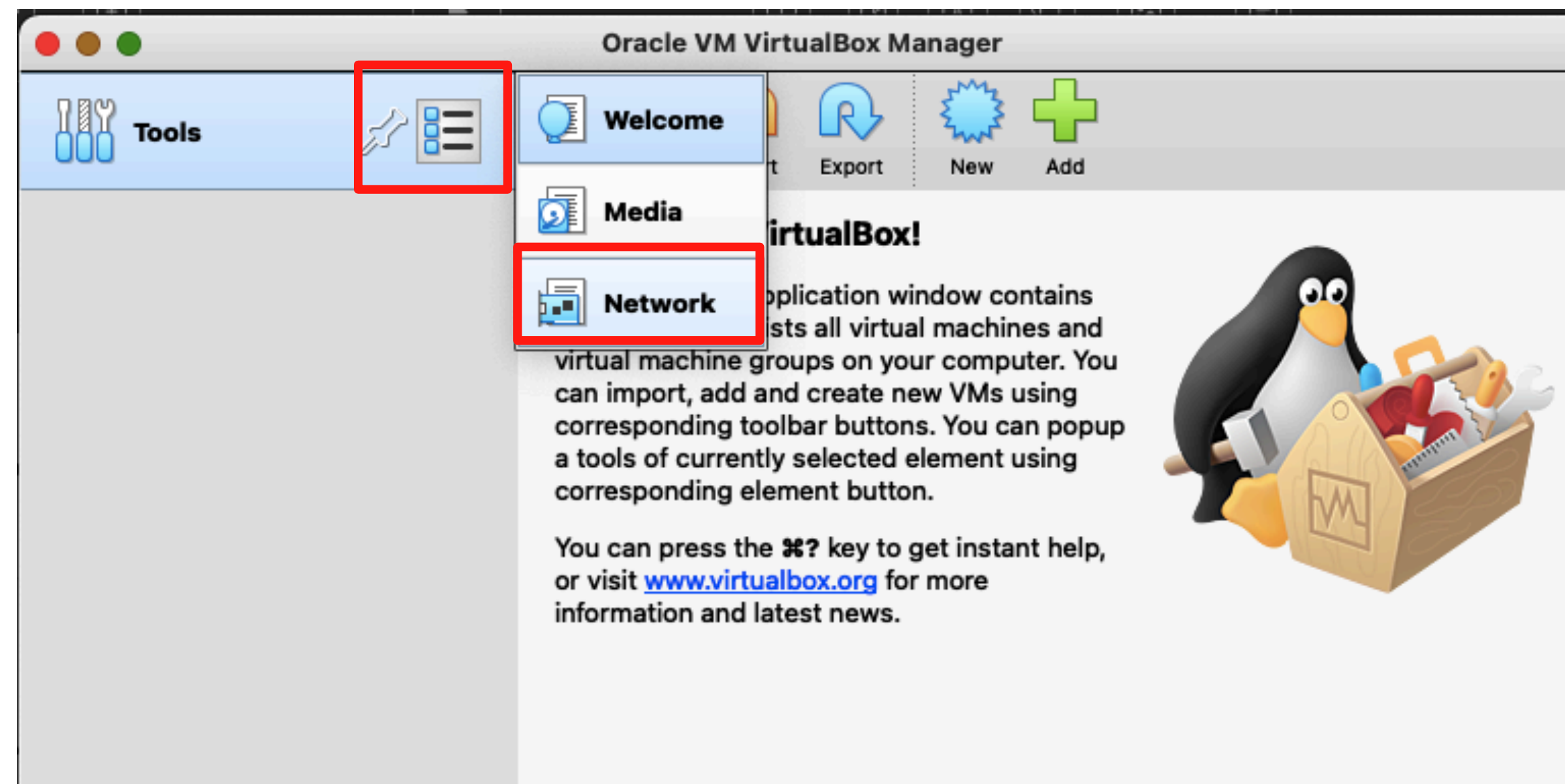
- Running VirtualBox on Windows?
  - You need some extra configuration!
- [Go to my labs README.md file.](#)
  - Follow the "high performance" instructions.

# Create a NAT network



# Create a NAT network

- In the VirtualBox preferences / settings:



# Create a NAT network

- In the VirtualBox preferences / settings

Cannot find the menu?  
File > Preferences.  
Go into "expert" and out again.





# Create a NAT network

- In the VirtualBox network

UTM on Mac?

Requires no setup.

Use "bridged" network.

Go in



# Create a NAT network

- In the VirtualBox Network settings:
  - Find the “NAT Network” tab.
  - Create a new NAT network “*NATnetwork*”.



# Creating our VM

- Type: Linux, Fedora 37, 64-bit
- 2 cores, 4096 MB RAM
- Create a virtual hard disk
  - “Dynamically allocated”, 60 GB, VDI type
- Network: connect to NAT Network “*NATNetwork*”
- Connect the Fedora ISO / DVD

# Install Fedora

- For now, we'll use the default disk layout.
- After the reboot, setup your user account.

# You try!

- Can you double-check:
  - Where does VirtualBox store the disk image?
  - What size is the “disk” set to?
  - What size is the image file really?

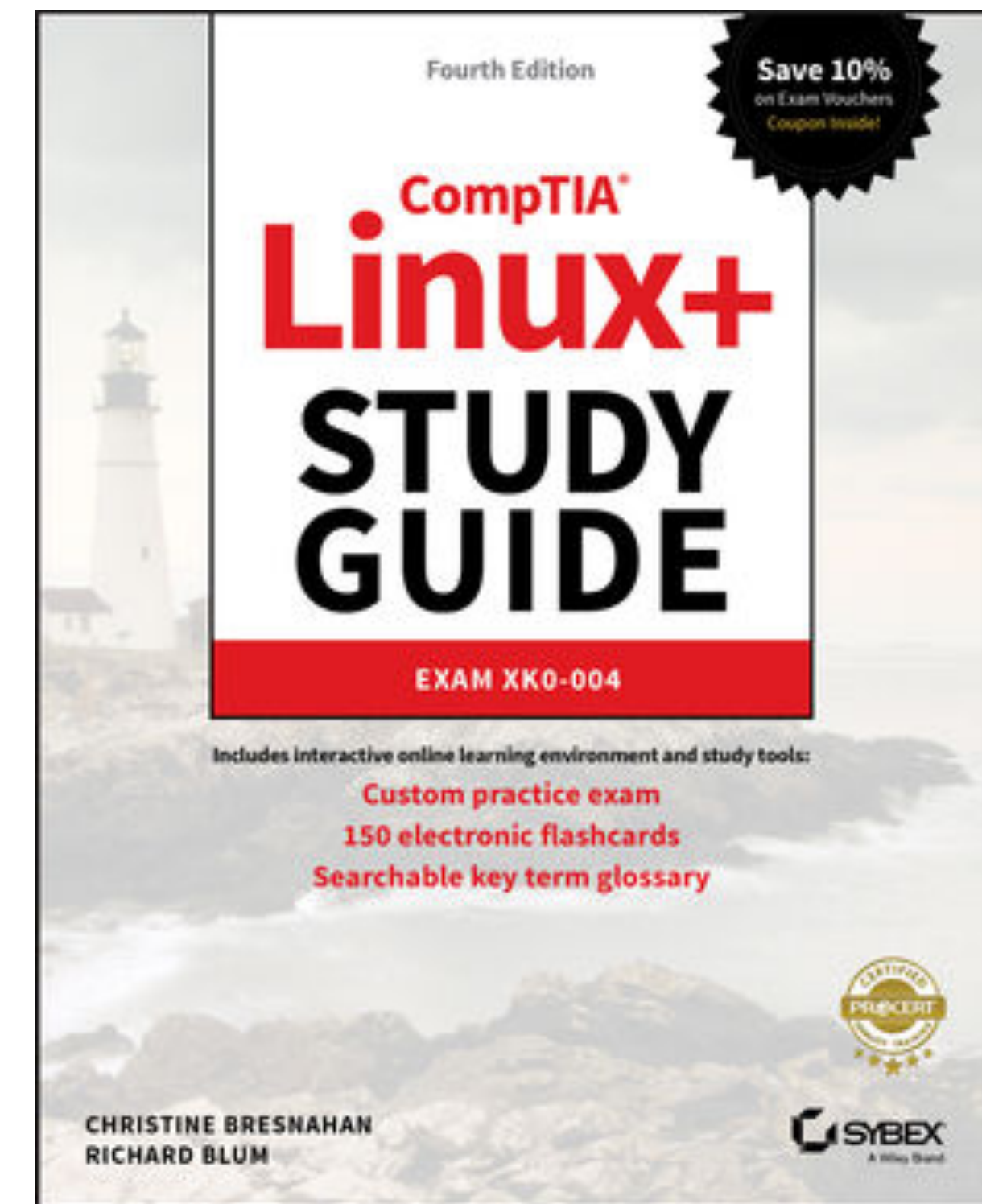
# Closing

# Next week

- Virtualization and networking
- Users and groups

# Homework

- Reading:
  - Chapters 1, 2 and 3.
  - Chapter 10, p291-309
  - Chapter 12, p382-384
  - Chapter 16, p486-496



# Homework

- Try installing the Ubuntu server VM.
  - Make sure it's in the same "*NATnetwork*".
  - Give it 2 CPU cores and 2048MB RAM.

# Homework

- Q1: How do the following Linux “distributions” relate to each other?
  - Red Hat Enterprise Linux
  - Fedora Linux
  - CentOS
  - Oracle Linux



# Homework

- Q2: How do the following Linux “distributions” relate to each other?
  - Debian
  - Ubuntu
  - Kali Linux

# Homework

- Q3: Is “Linux” a “Unix”? Why?
- Q4: Is “MacOS” a “Linux”? Or a “Unix”?

# Homework

- On your Fedora workstation, try out a few apps.
  - LibreWrite, LibreCalc.
  - The files browser, to explore the "hard drive".
  - The Gnome tour.
  - Install a few apps using the app store, like:
    - Apostrophe, Gitg and Diagrams.

# Optional homework

- If you want to try the official RHEL, you can!
  - Red Hat offer a free “developer” license.
  - Register at <https://developers.redhat.com/register>
- The Red Hat Developers site has free books!
  - And they’re *good books*!

# Q&A

# Reference materials

# Resources

- Open source: [Gratis vs Libre](#)
- [History of Unix](#) (Wikipedia)
- [Linux distributions](#) (Wikipedia)
- [Linux rocks!](#)

# Resources

- Andrés Aravena - [First steps on UNIX](#)
- [Dumb terminals](#) (youtube)
- [UART root shells](#) (youtube)