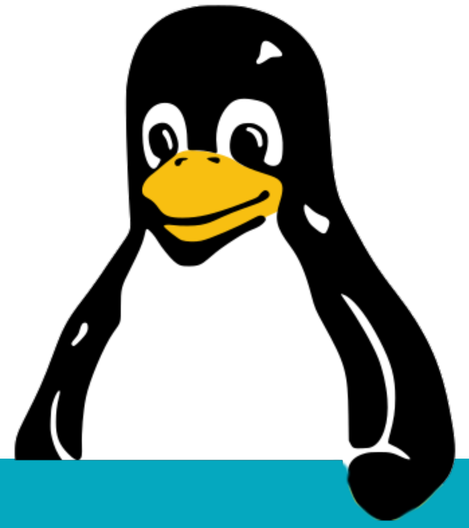
Linux, day 1



Learning objectives

- The goals for our 17-class course; why learn Linux?
- What "virtualisation" is.
- How to install and configure a virtualisation tool.
- How to install the Linux operating system
- How to startup, login and shutdown Linux.
- How to check your network configuration.

What will we do today?

- Introductions
- Lab prep
- Why even learn Linux?!
- Guided exercise: installation
- Guided exercise: meeting Linux
- Closing: homework and Q&A

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.

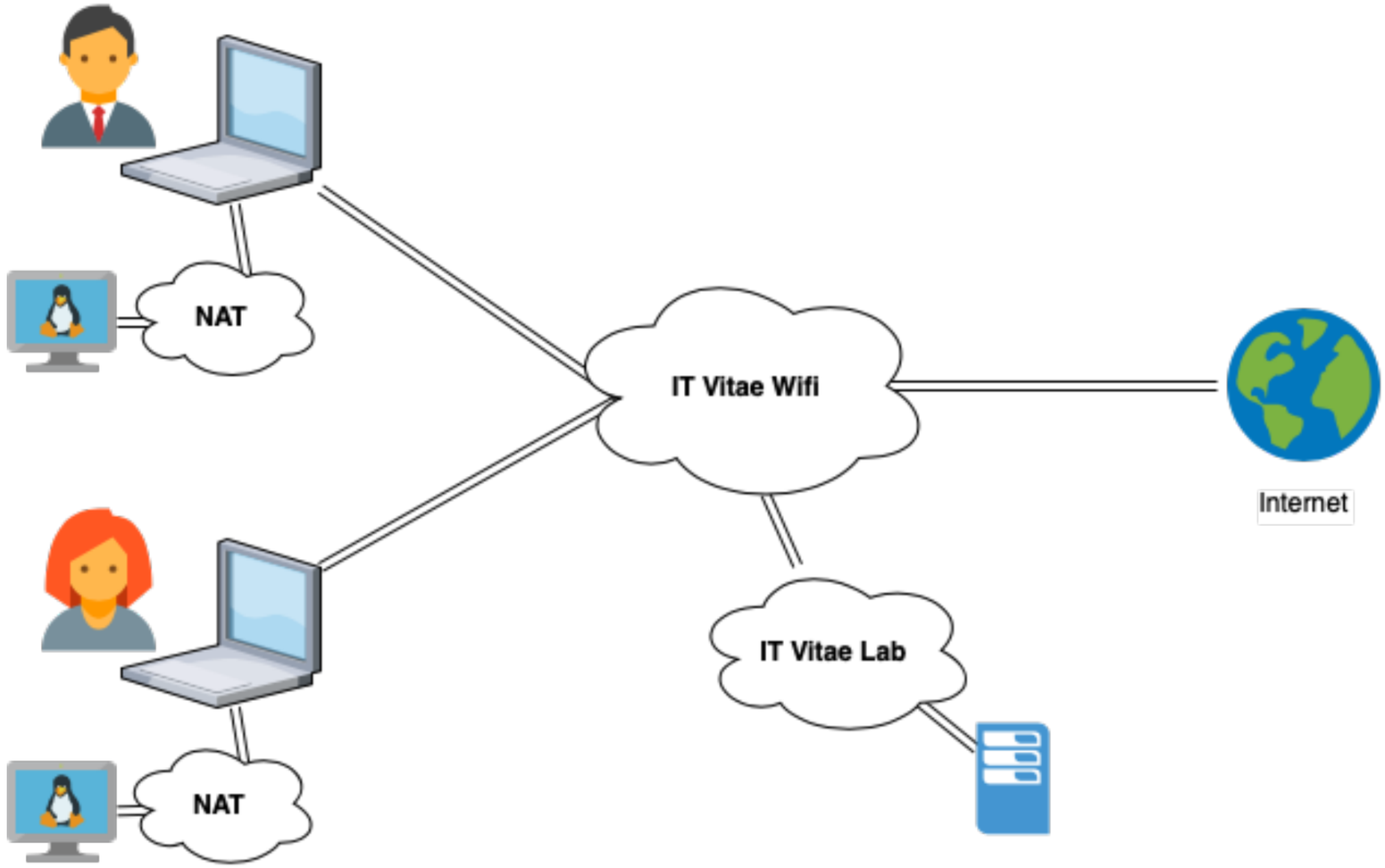
Guided exercise: installation

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

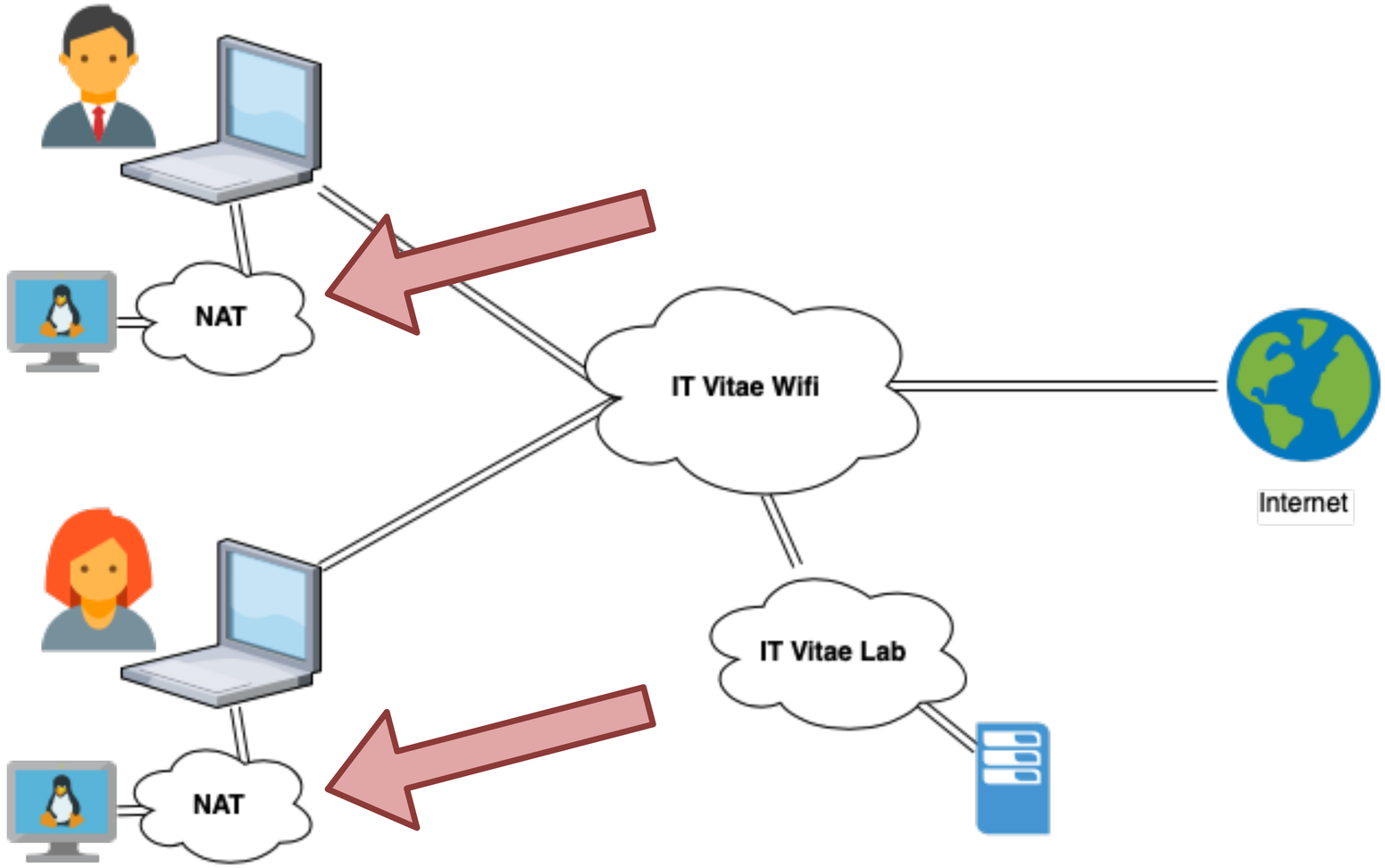
- Install VirtualBox
- Create a VM
- Install Fedora Workstation

Installing VirtualBox

- Windows? Just follow the wizard.
  - MacOS? Ditto!
  - Linux? Download the RPM or DEB and install.

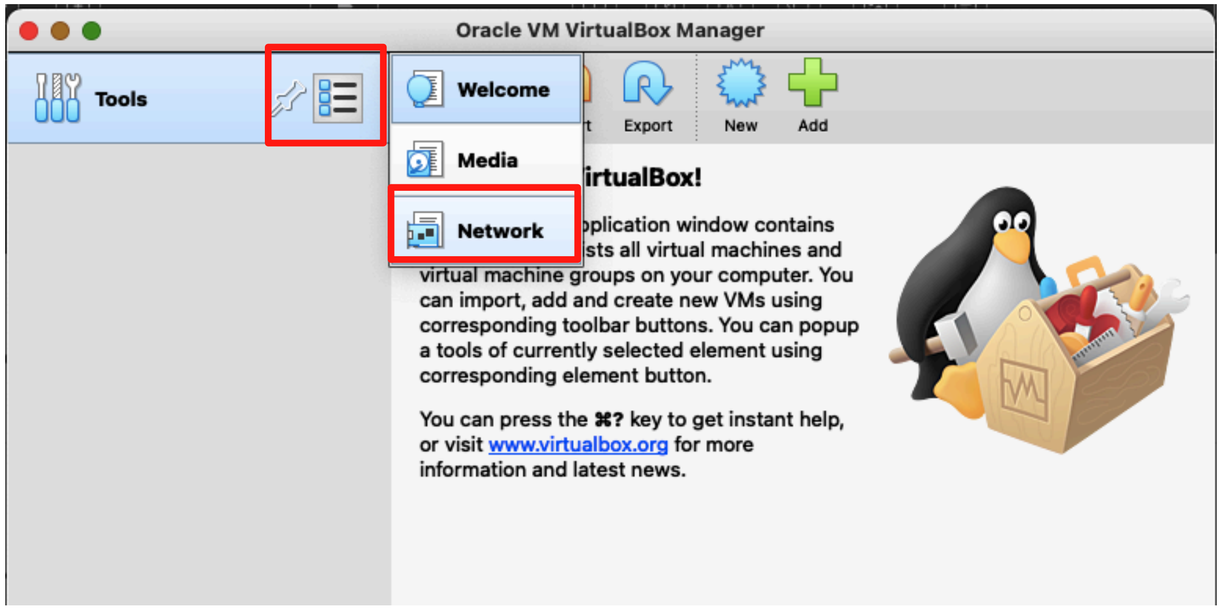
- On MacOS, you need to allow VBox kernel modules.
  - System Preferences -> Gatekeeper -> Allow

Create a NAT network



Create a NAT network

- In the VirtualBox preferences / settings:



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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?

Recap: installation

- VirtualBox is a "hypervisor".
- A VM is a simulation of a real computer.
- VMs are used for security and efficiency.
- "Disk image" files are virtual hard drives for the VM.

Guided exercise: meet Linux

Go on! Login :)

- You have setup a user account.
- Feel free to login on your VM.

You try!

- Login to the graphical desktop.
- Switch to “*tty2*” or "*tty3*".
- Login over there as well.
- Run:

```
$ whoami
$ who
```

Shutting down or rebooting

- In Gnome, use the top-right menu widget.
- Or from a terminal run:

```
$ sudo reboot
$ sudo shutdown -h now
```

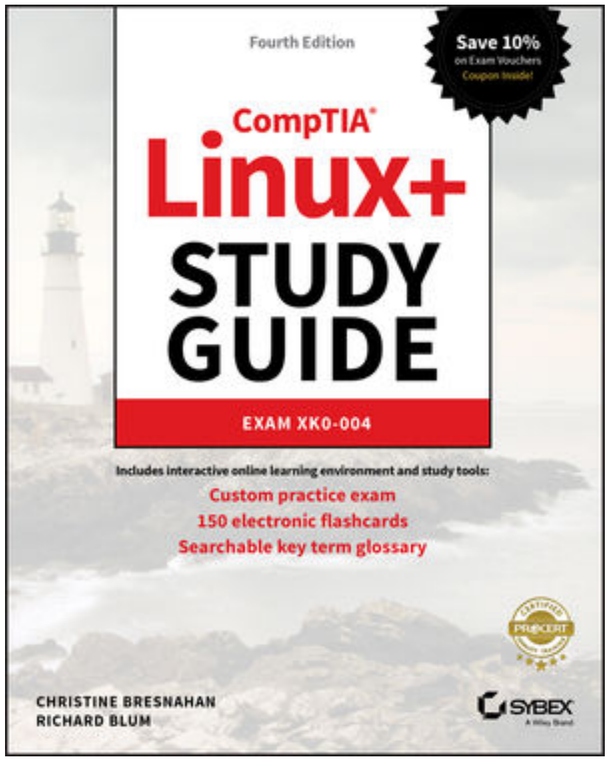
Your first commands

echo	Output a string
who	Who (is logged in)
whoami	Who am I?
reboot	Reboot the system
shutdown	Shutdown or reboot the system

Closing

Homework

- Reading:
  - Chapters 1 and 2
  - Chapter 10
  - Chapter 16, "Using SSH"



Homework

- Try installing the Ubuntu server VM.
  - Make sure it's in the same "*NATnetwork*".
  - It needs less RAM. You can give it 1GB.

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:
    - Bitwarden, 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)