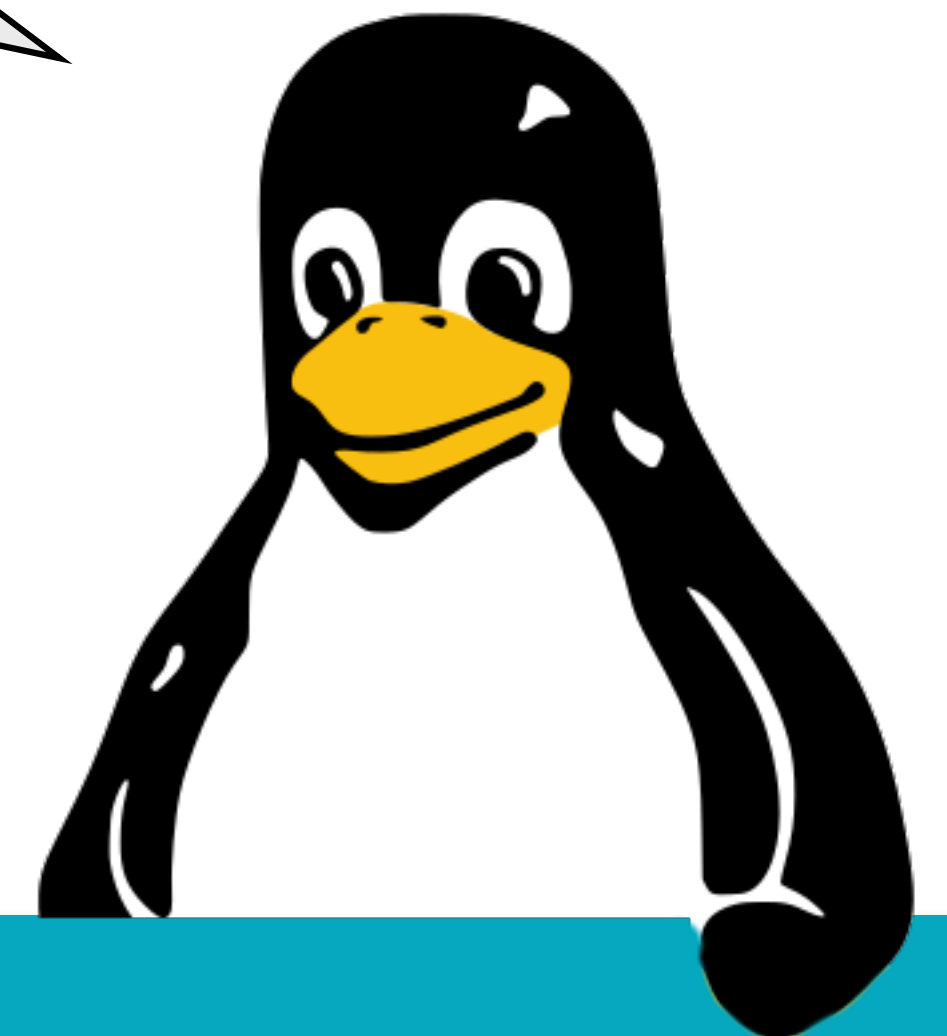


Linux, day 2

Labs!

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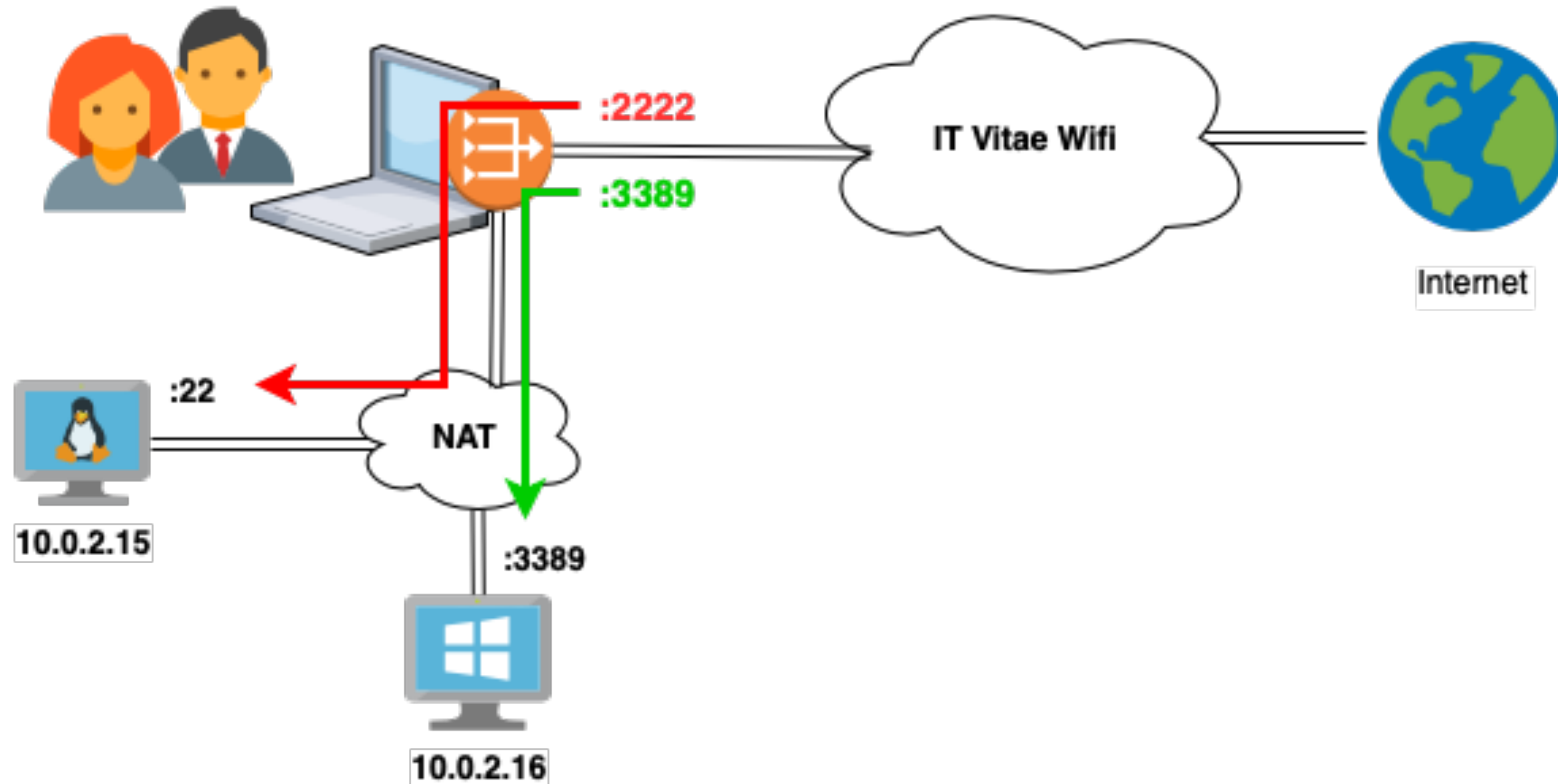
Related objectives

Objective	Summary	Book
1.2	File editing, file and directory operations	3
2.2	Account creation and deletion	10
2.4	SSH	16

Networking and virtualization



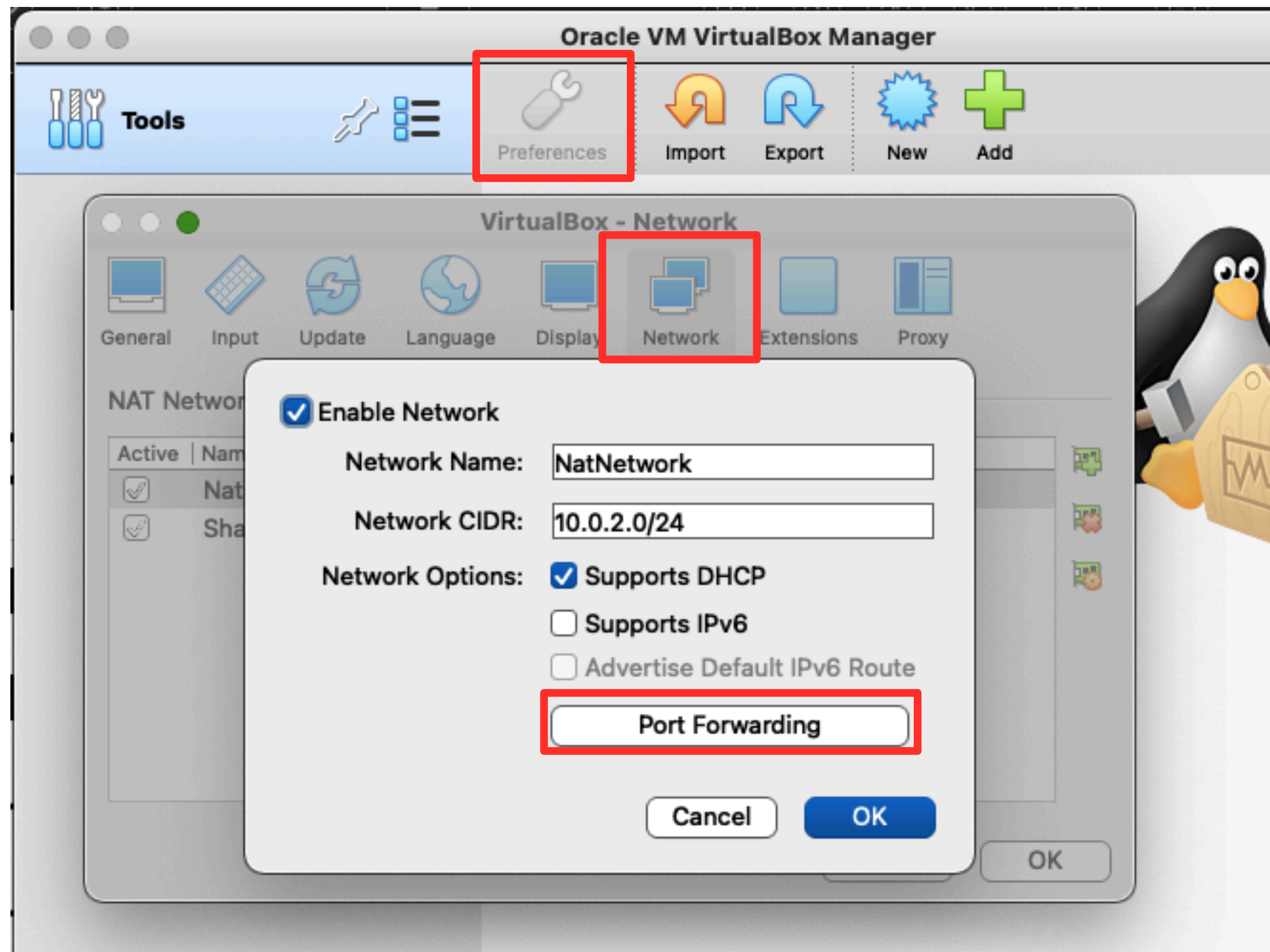
Port forwarding into NAT Net



You try!

- First, find your VM's IP address (10.0.2.4?)
- In the VirtualBox configuration / settings:
 - Find the shared "*NATnetwork*".
 - Add a port forward on 127.0.0.1:2222.
 - To port :22 of your VM (e.g. 10.0.2.4).

You try!

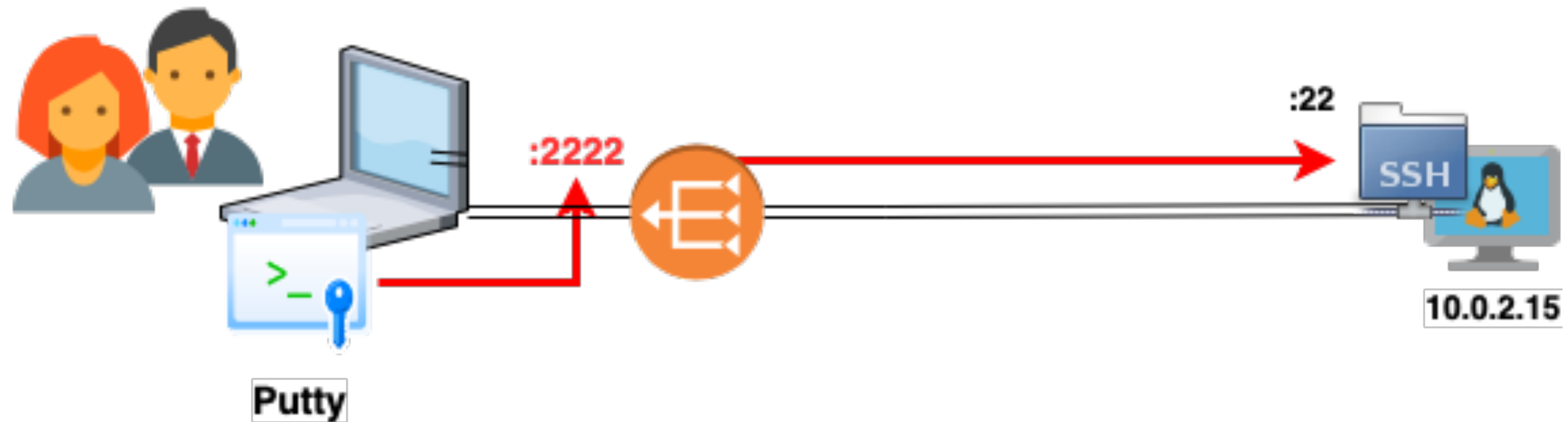


IPv6					
Name	Protocol	Host IP	Host Port	Guest IP	Guest Port
...	TCP	127.0.0.1	2222	10.0.2.15	22

What did we just do?

- On the host OS we made a “listener” on 2222.
- This “listener” forwards all traffic,
 - Coming to port 2222 on the host OS...
 - To port 22 on the guest OS (VM).
- So, let's make sure something's there!

Using the port forward



You try!

- On your host OS, connect to 127.0.0.1:2222.
 - Windows: use *Putty.exe*, or Powershell.
 - MacOS and Linux:

```
$ ssh -p 2222 tess@127.0.0.1
```

See: [Download Putty](#)

Making connecting easier

- Nobody likes remembering IP addresses!
 - On the VMs (both) run:

```
$ sudo nano /etc/hosts
```

- This asks for YOUR password.

Making connecting easier

- Add two lines, adjusted for your IP addresses.

```
10.0.2.5  ubuntu  
10.0.2.4  fedora
```

- Save and quit with <ctrl><x>.

Making connecting easier

- On the guest VMs, you can now run:

```
$ ssh tess@ubuntu
```

```
$ ssh tess@fedora
```

Command recap

netstat	NETwork STATistics
systemctl	SYSTEM ConTroL, manage services
sshd	SSH daemon, the service
ssh	SSH client
/etc/hosts	Local list of IP to hostname mappings

Making Host OS to VM connections easier



Oofff!

- So far, we've done this to login:

```
$ ssh -p 2222 tess@localhost
```

- That's a lot to type and to remember!
 - It's easy to mix up the ports!

/etc/hosts cannot help us

- If localhost:2222 is Fedora,
 - And if localhost:2223 is Ubuntu,
 - Then it's not the hostname that's the problem!
- We need to find a way to make aliases.

SSH config aliases

- We can configure the SSH client,
 - To give it pre-defined connection aliases.

See: [Stop making shell aliases for SSH!](#)

Which config file?

- All of this applies to your host OS!

Windows - Putty	Just use the graphical interface. 😊
Windows - Powershell	notepad \$HOME\.ssh\config
Linux	nano ~/.ssh/config
MacOS	vi ~/.ssh/config

What to add?

Host fedoravm

Port 2222

Hostname localhost

Host ubuntuvm

Port 2223

Hostname localhost

Now, you can run:

```
$ ssh tess@fedoravm
```

```
$ ssh tess@ubuntuvms
```

From the host OS as well! 🎉

LAB: Users and groups

Command hints

useradd	Create a new user
usermod	Modify a user
groupadd	Create a new group
id	Show identity of a user
man	MANual pages

Assignment

- Create two new groups:
 - “staff” and “dummies”
- Create another two new users:
 - “opsuser” and “dummy2”
- Add yourself and “opsuser” to “staff”.
- Add “dummy” and “dummy2” to “dummies”

Assignment (spoilers)

```
$ sudo useradd -m opsuser  
$ sudo useradd -m dummy2  
$ sudo groupadd staff  
$ sudo groupadd dummies  
$ sudo usermod -a -G staff opsuser  
$ sudo usermod -a -G staff $USER  
$ sudo usermod -a -G dummies dummy  
$ sudo usermod -a -G dummies dummy2
```

Closing

Next week

- Files and directories
- File permissions
- Git

Homework

- Reading:
 - "Files and directories", p 39-55
 - "File permissions", p 411-420
 - Chapter 27
 - < page numbers need updating >

Homework

- Go do:
 - Request a [free copy of the CPH book](#).

Q&A

Reference materials

Resources

- [VirtualBox networking modes](#)
- [Stop making shell aliases for SSH!](#)
- [Download Putty](#)
- [Download WinSCP](#)
- [SSH keys for dummies](#)
- [Cyber Plumber's Handbook](#)