[544] Docker Compose

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Learning Objectives

- configure SSH tunneling and Docker port forwarding to communicate with an app in a container on a different machine
- deploy multi-container apps with Docker compose

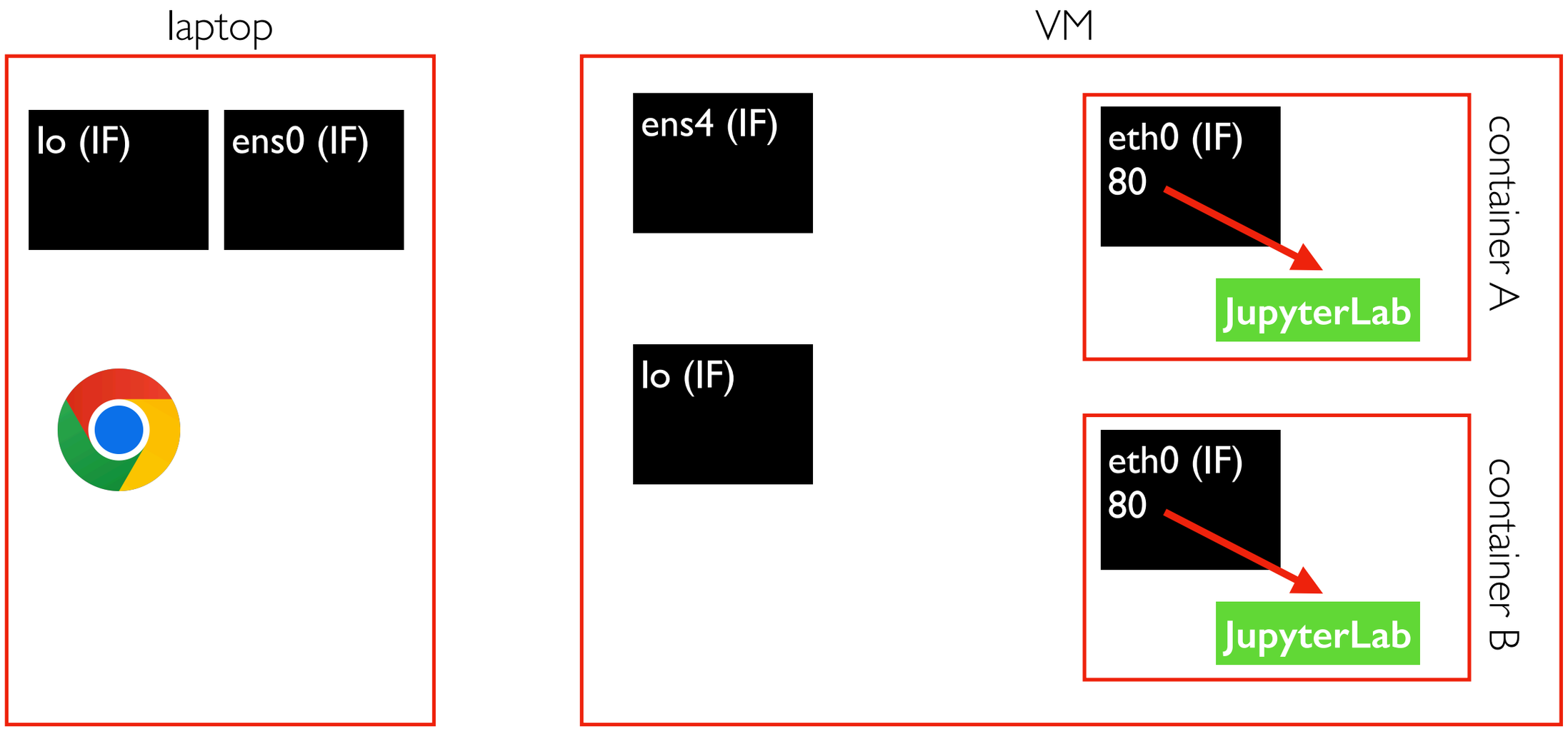
Outline

Docker Port Forwarding

Docker Compose

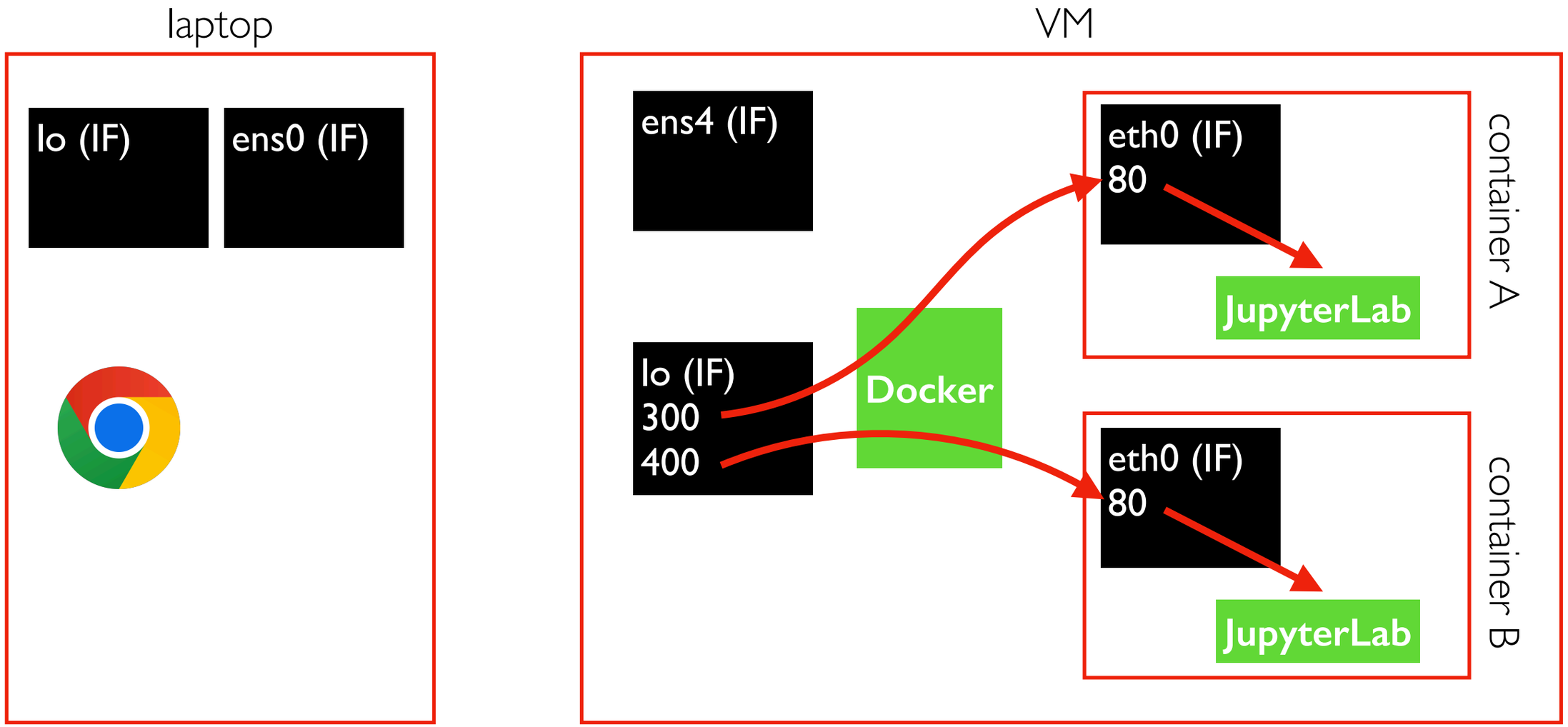
Interfaces (IF) and Ports

both containers have
a virtual port 80



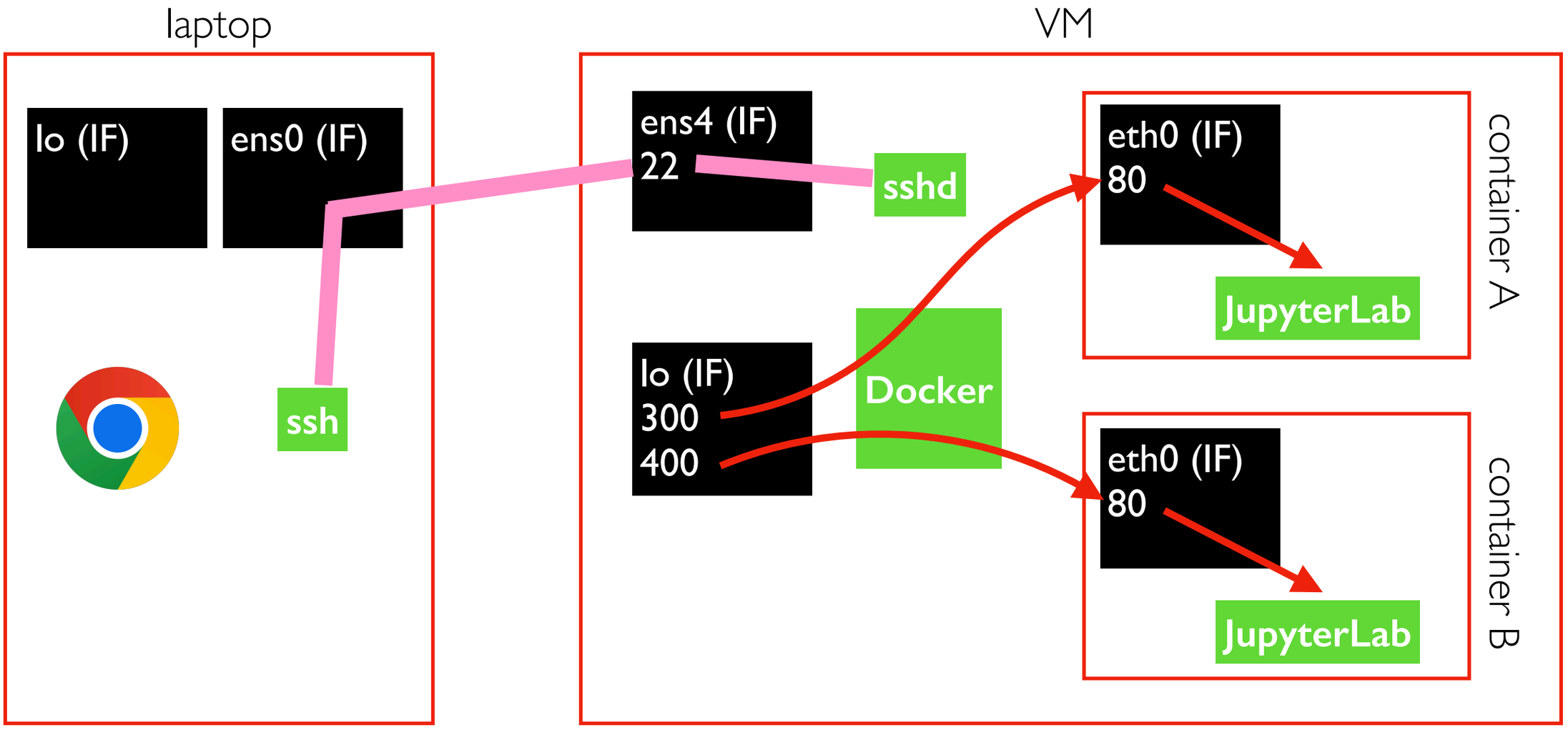

```
docker run -d myimg
docker run -d myimg
```

Interfaces (IF) and Ports




```
docker run -d -p 127.0.0.1:300:80 myimg
docker run -d -p 127.0.0.1:400:80 myimg
```

Interfaces (IF) and Ports

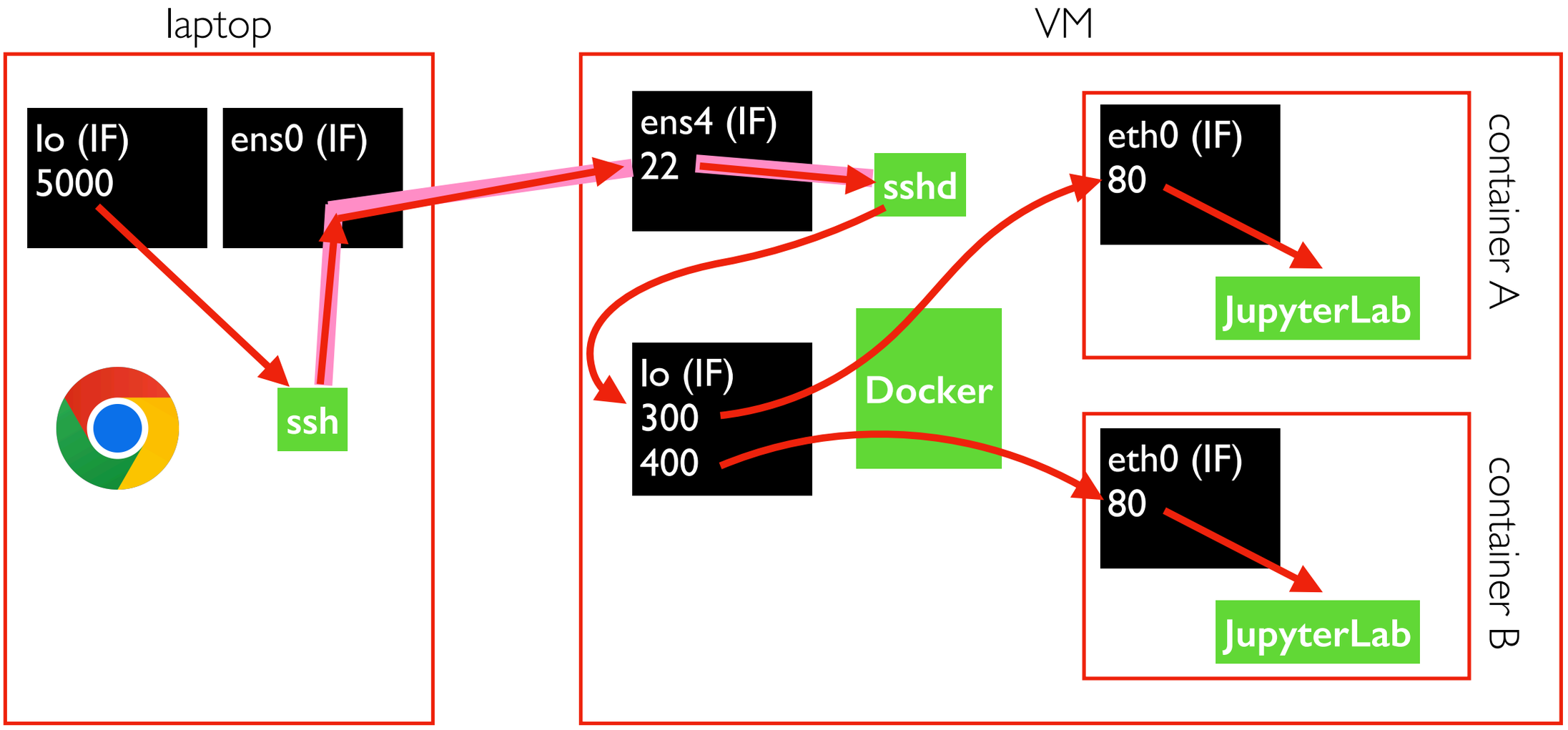


ssh USER@VM

docker run -d **-p** 127.0.0.1:300:80 myimg
docker run -d **-p** 127.0.0.1:400:80 myimg

the SSH connection can be used to send comands and/or forward network traffic

Interfaces (IF) and Ports

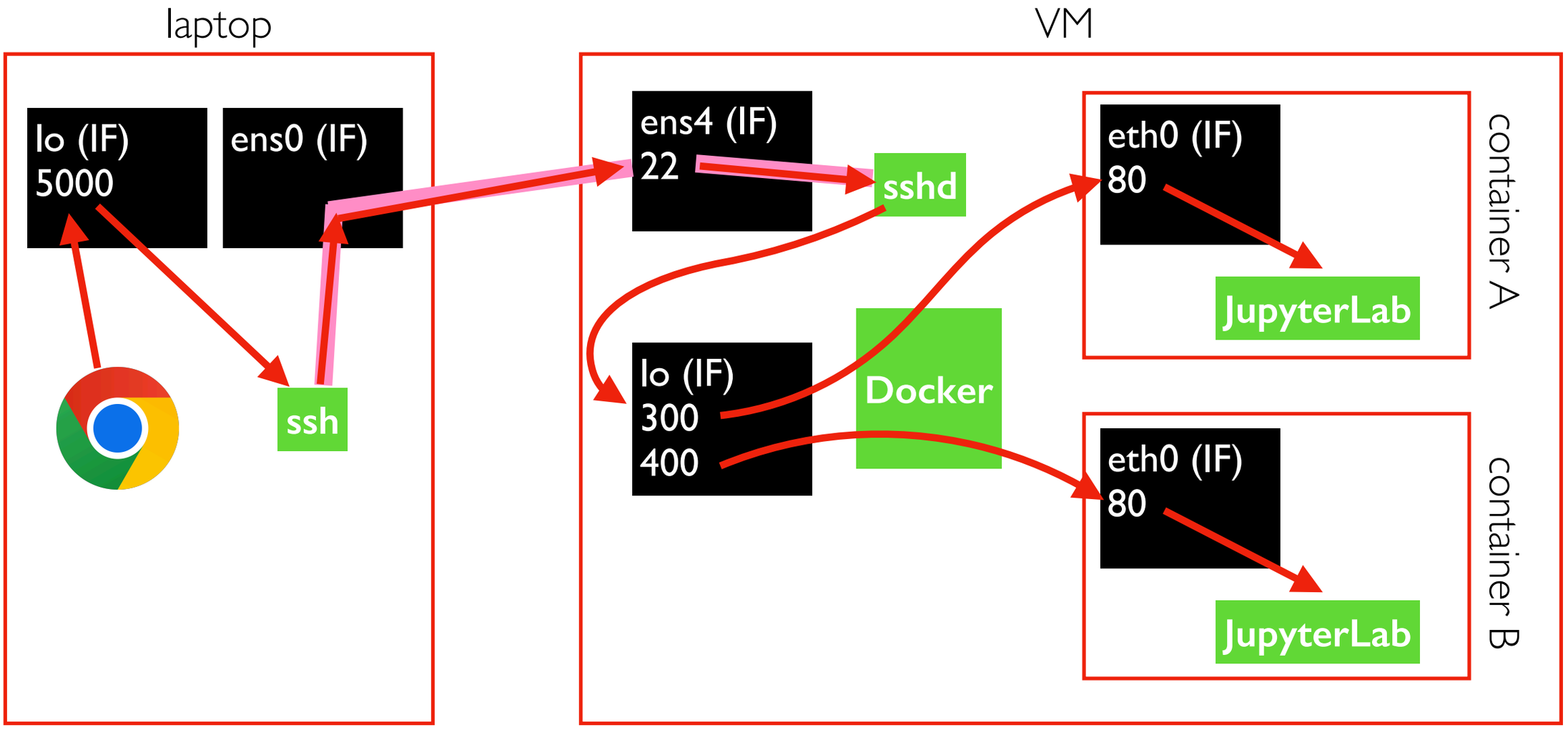


ssh USER@VM **-L** localhost:5000:localhost:300

docker run -d **-p** 127.0.0.1:300:80 myimg
docker run -d **-p** 127.0.0.1:400:80 myimg

the SSH connection can be used to send comands and/or forward network traffic

Interfaces (IF) and Ports



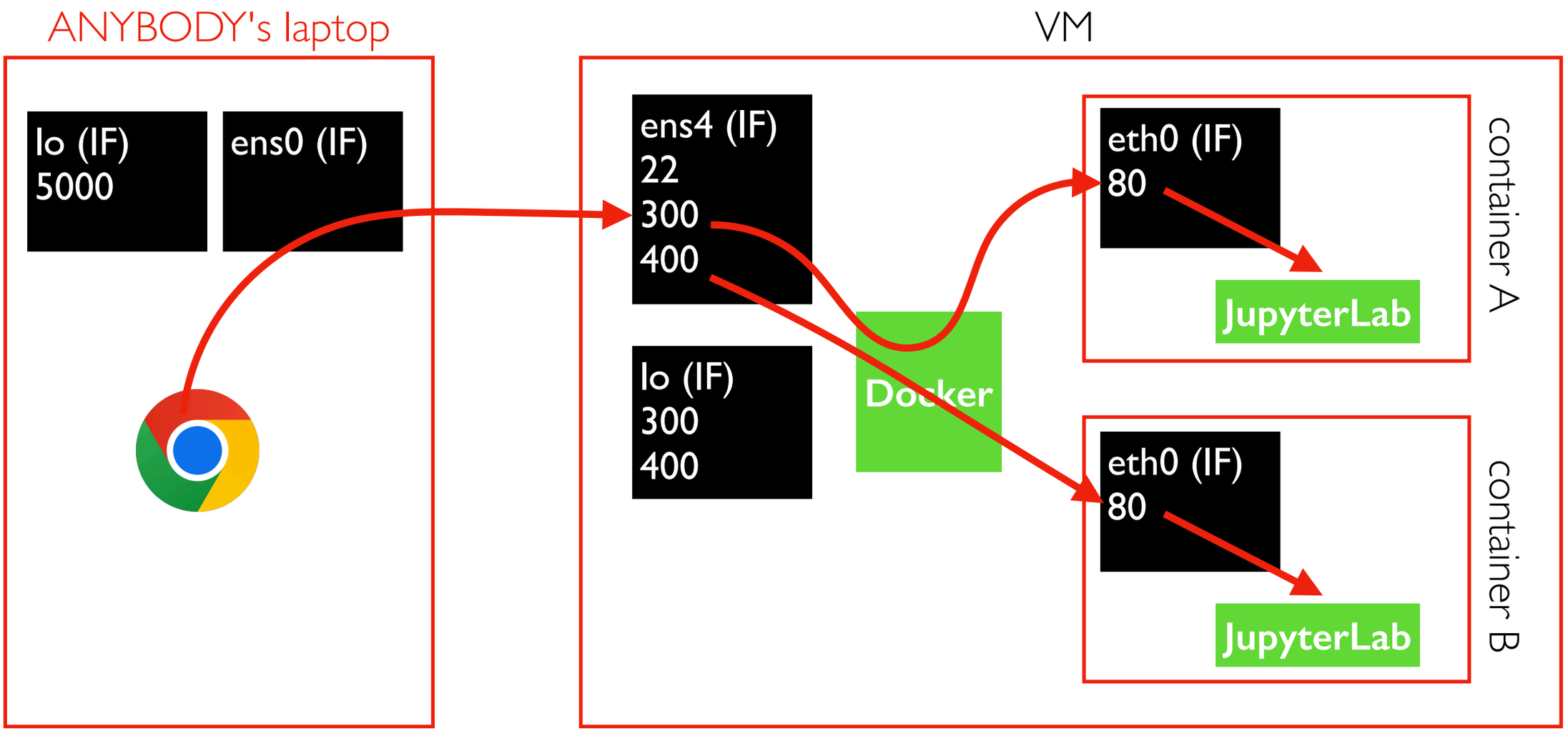
ssh USER@VM **-L** localhost:5000:localhost:300

docker run -d **-p** 127.0.0.1:300:80 myimg
docker run -d **-p** 127.0.0.1:400:80 myimg

http://localhost:5000/lab (in browser)

yay! You can connect to JupyterLab
inside a container running on your VM

Interfaces (IF) and Ports



docker run -d **-p** 300:80 myimg

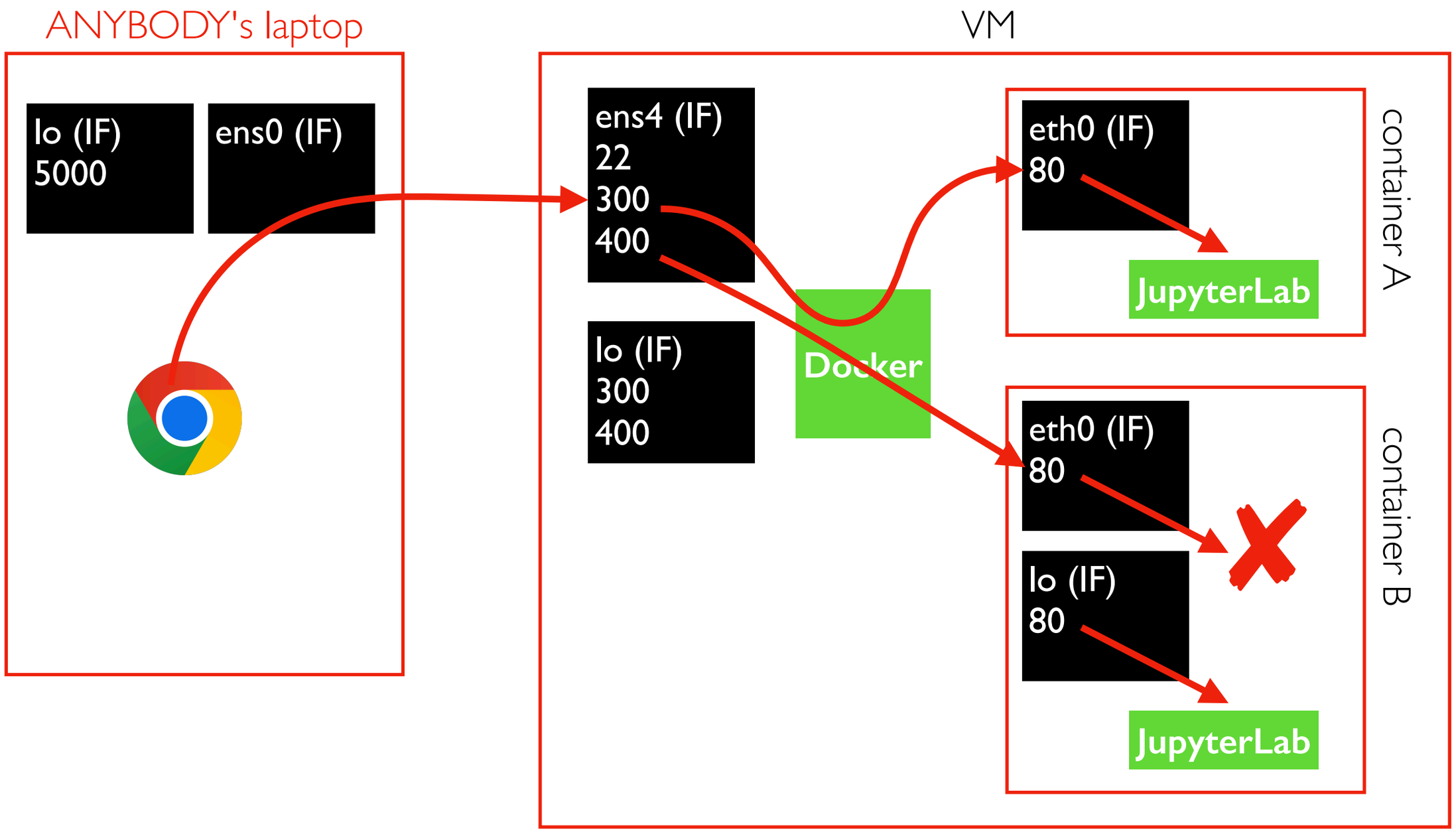
docker run -d **-p** 0.0.0.0:300:80 myimg

Careful, default is to listen on all NICs!

Other security options:

- firewall (block port 300)
- password (in JupyterLab)

Interfaces (IF) and Ports



Port forwarding never goes to loopback inside container

- don't use localhost or 127.0.0.1 inside container!
- easiest: use 0.0.0.0 inside container (for all) to port-forwarded traffic

TopHat...

Outline

Docker Port Forwarding

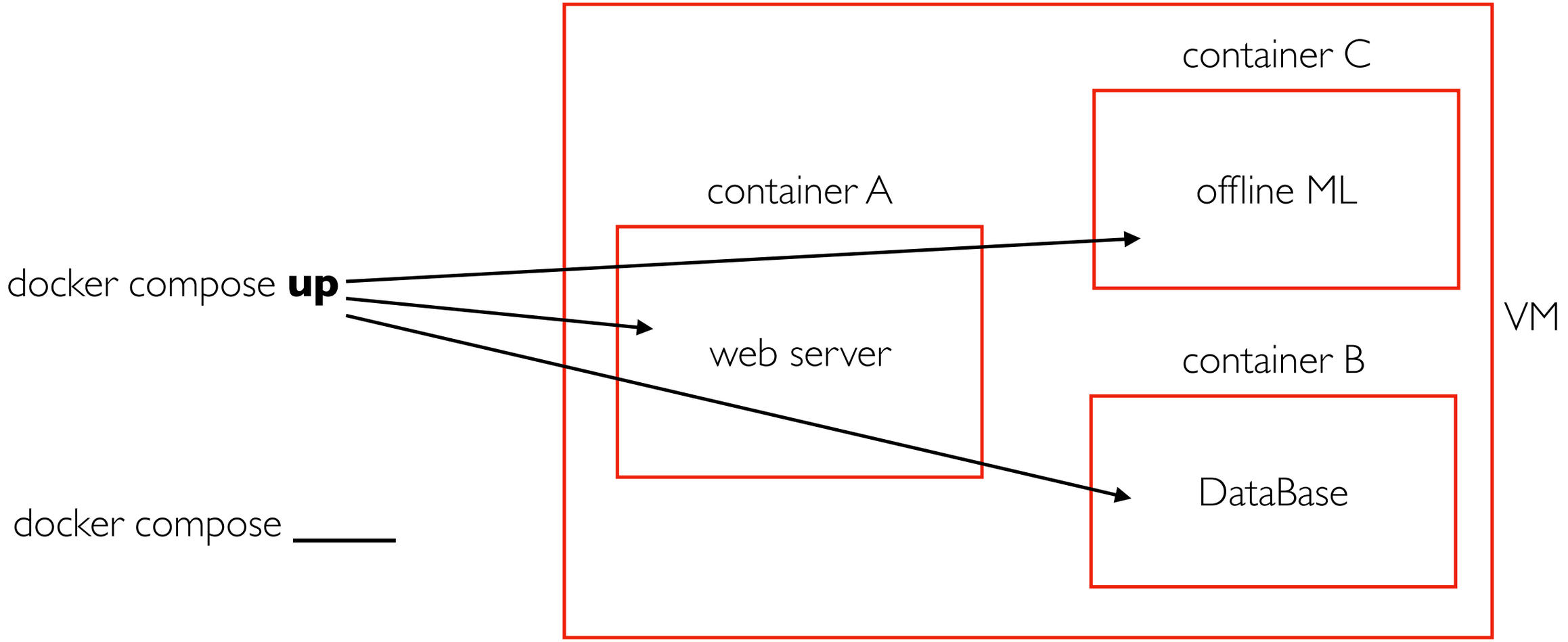
Docker Compose

Container Orchestration

Orchestration lets you deploy many cooperating containers across a cluster of Docker workers.

Kubernetes (K8s) is the most well known.

Docker compose is a simpler tool that lets you deploy cooperating containers to a single worker.



Demos...