

# Vagrant

COMS10012 / COMSM0085

Software Tools

# Virtualisation

- emulate a different stack
- reproducible build environment
- cost / scalability

# Software

## Virtualisation:

VMware,  
VirtualBox (Oracle)

## Containers:

Docker  
Kubernetes

vagrant

bochs, qemu,  
DOSbox, ...

OpenStack, rkt, ...

# Installing vagrant

Lab machines (but not seis): installed

From the web: [www.vagrantup.com/download](http://www.vagrantup.com/download)

Linux: vagrant recommends *not* using your system's package manager (but Arch seems to work).

Windows: read

[www.vagrantup.com/docs/installation](http://www.vagrantup.com/docs/installation), you may need to disable Hyper-V.

# Vagrant



Host: folder with  
Vagrantfile (ruby)

Different providers

ssh access to guest

can share folders  
between host/guest

# Vagrantfile

Vagrant.configure("2") do |config|: This is the beginning of the Vagrant configuration file, specifying the configuration version number as "2". do |config| is a block in Ruby that specifies the contents of a configuration.

```
Vagrant.configure("2") do |config|
    config.vm.box = "generic/debian12"
end
```

config.vm.box = "generic/debian12": This line specifies that the Vagrant virtual machine image to be used is "generic/debian12", which is a general base image based on Debian 12.

box repository:

<https://app.vagrantup.com/boxes/search>

# Start the machine

```
$ vagrant up
```

```
Bringing machine 'default' up with  
'virtualbox' provider...
```

```
==> default: Importing base box  
'generic/debian12'...
```

```
...
```

```
==> default: Machine booted and ready!
```

# Commands

**vagrant up** start machine

**vagrant ssh** log in

**vagrant halt** stop machine

**vagrant reload** stop+start machine (for config update)

**vagrant destroy** delete machine

All commands require a Vagrantfile in the current directory.

# Log in

```
$ vagrant ssh
```

```
vagrant@debian12:~$
```

```
vagrant@debian12:~$ whoami
```

```
vagrant
```

```
vagrant@debian12:~$ exit
```

```
logout
```

```
Connection to 127.0.0.1 closed.
```

```
$
```

# ssh

```
$ vagrant up
```

```
...
```

```
==> default: Forwarding ports...
    default: 22 (guest) => 2222 (host)
```

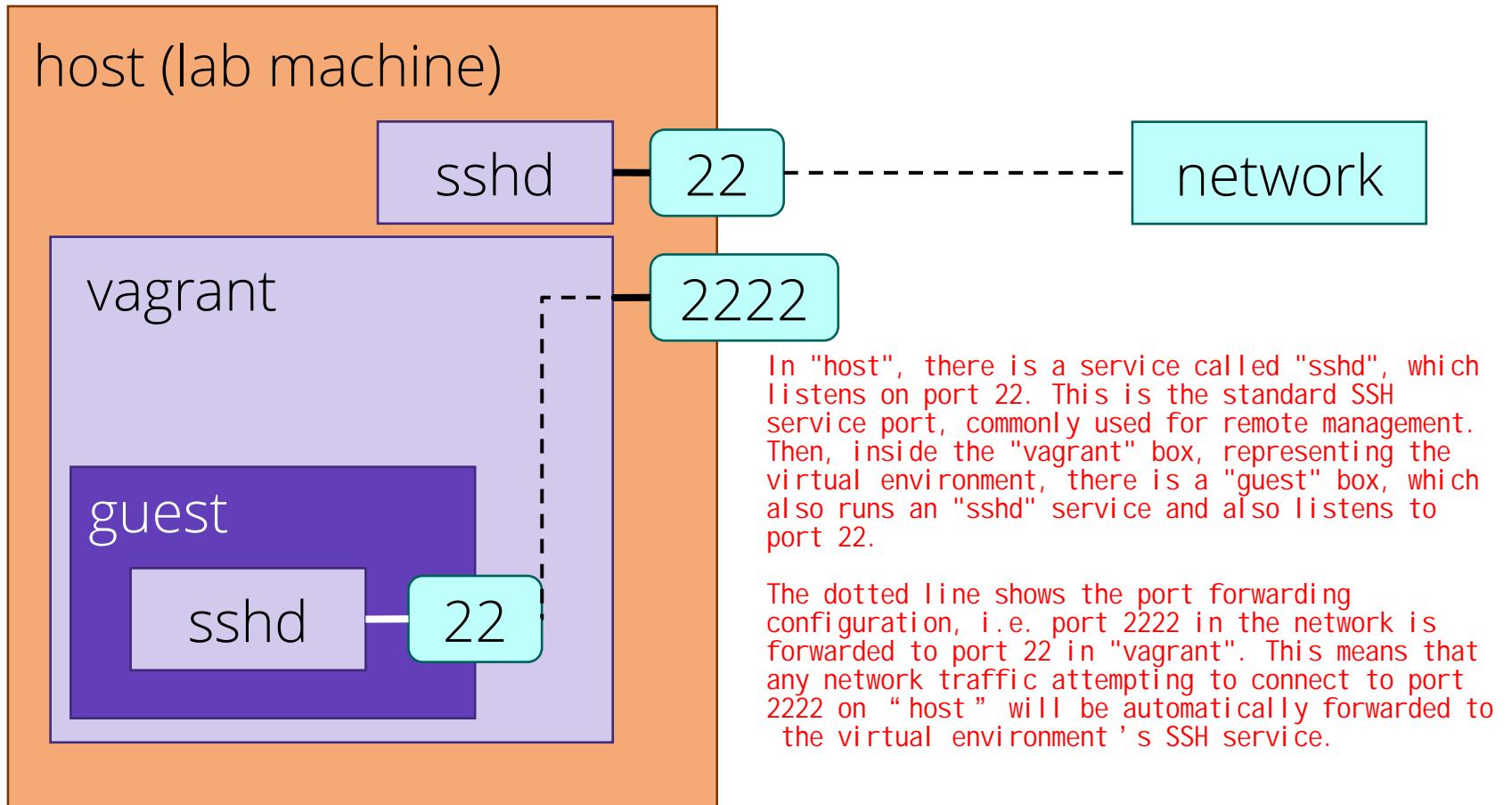
```
...
```

```
default: SSH address: 127.0.0.1:2222
default: SSH username: vagrant
default: SSH auth method: private key
default: Vagrant insecure key detected.
```

Vagrant will automatically replace this with a  
newly generated keypair for better security.

```
default: Inserting generated public key within
guest...
```

# ssh and port forwarding



# keys

Remember: if you have a *secret key*, you can ssh in to a machine that has the matching *public key*.

Vagrant box (in repository) has a default public/secret key pair.

When you provision (vagrant up) a box, it creates a new key pair – this is more secure, and you can use it with **vagrant ssh**.

# Storage

Normal use: virtual machines stored in

- Linux: ~/.vagrant.d 我在C:\Users\User\vagrant.d底下找到
- Windows: C:\Users\NAME\.vagrant.d

Some configuration goes in the **.vagrant** folder in the folder with the Vagrantfile.

# Storage - lab machines

VMs are stored in `/tmp` and may not survive host reboots!

Also, they are not on NFS, so not visible from other lab machines.

- This is by design.
- Treat VMs on lab machines as disposable
  - back up your data somewhere else!

# Debian Linux

- Common, well-supported Linux distribution.
  - Saves us some headaches from previous years' Alpine
  - Mostly very similar – but look at slides and exercises if something in a video seems specific to Alpine.
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