

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

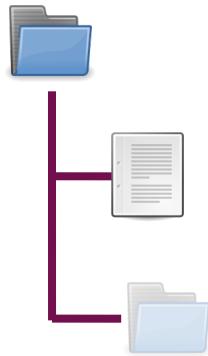
From the web: www.vagrantup.com/download

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

Windows: read

www.vagrantup.com/docs/installation, you may need to disable Hyper-V.

Vagrant



Vagrantfile
.vagrant

Host: folder with
Vagrantfile (ruby)

Different providers

ssh access to guest

can share folders
between host/guest

Vagrantfile

```
Vagrant.configure("2") do |config|
    config.vm.box = "generic/alpine317"
end
```

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

Start the machine

```
$ vagrant up
```

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

'generic/alpine317'...

```
...
```

```
==> 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
```

```
alpine317:~$
```

```
alpine317:~$ whoami
```

```
vagrant
```

```
alpine317:~$ exit
```

```
logout
```

```
Connection to 127.0.0.1 closed.
```

```
$
```

ssh

```
$ vagrant up
```

...

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

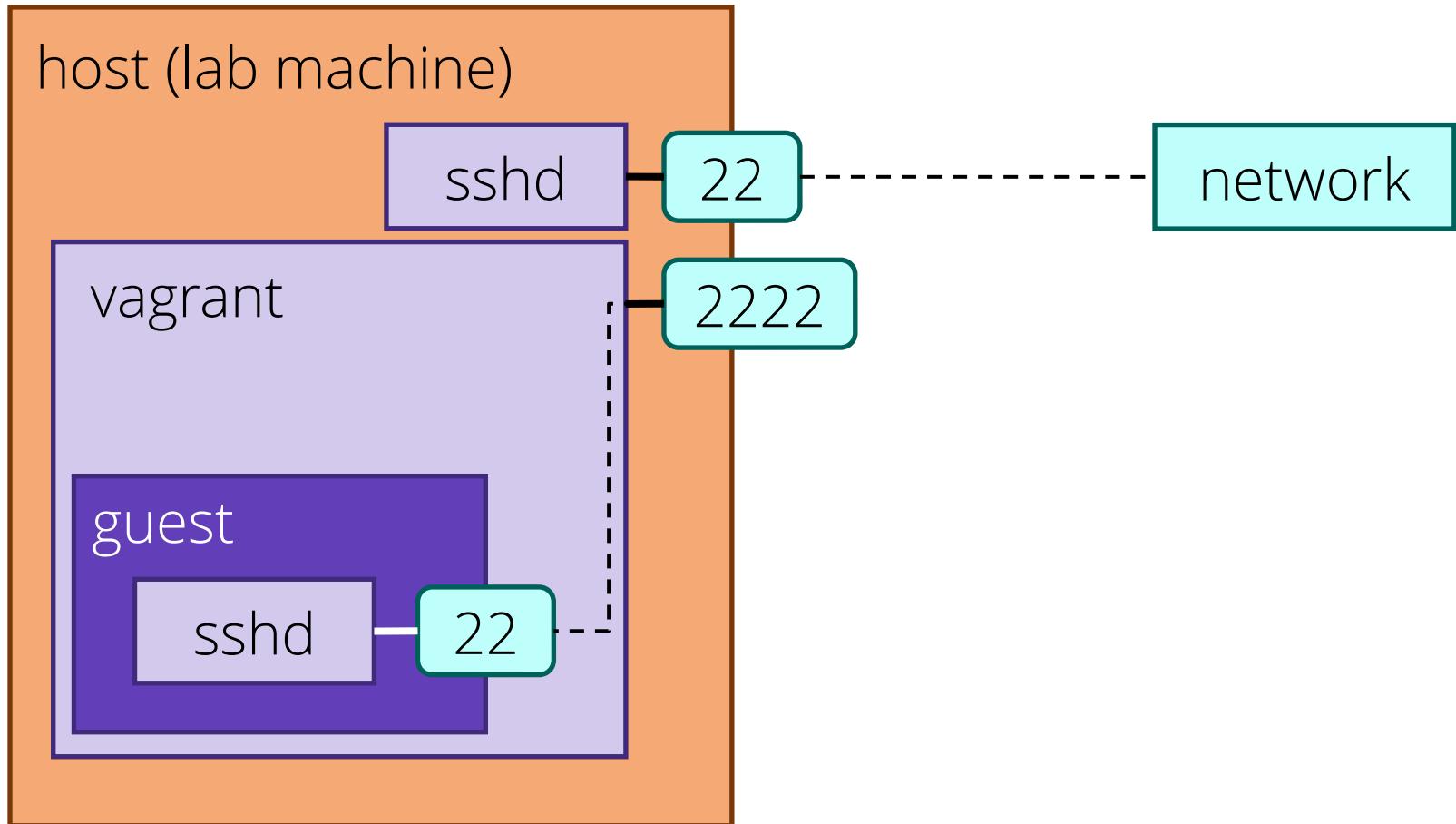
...

```
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`
- 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!**

Alpine linux

Minimal installation – no gcc, git etc. by default
(we'll learn to install it ourselves)

strong on security – good choice in production

small: container can fit in 8MB