Revision 1

C2115 Practical introduction to supercomputing

Lesson 4

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Ubuntu 18.04

(code name: bionic)

http://www.ubuntu.com/

- **Installation of Ubuntu Server**

  VirtualBox, access via ssh, installation of applications

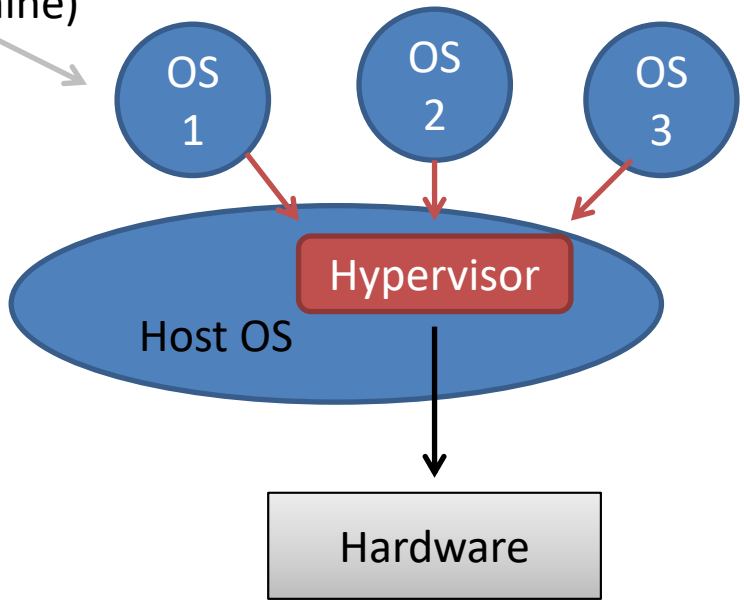
Virtualization - Hypervisor

Virtualization are procedures and techniques that access to available resources in a different way than they physically exist. Virtualization can be done **at different levels**, from the whole computer (so-called. **virtual machine**), to its individual hardware components (e.g., virtual processors, virtual memory, etc.), or only the software environment (virtualization of operating system).

source: www.wikipedia.org

Hypervisor - virtual machine administrator

Guest OS (in a virtual machine)



VirtualBox

www.virtualbox.org

Supported host OS:

MS Windows, Mac OS X, Linux

License: freeware + proprietary extension for non-commercial use

PLEASE CAREFULLY READ FOLLOWING INSTRUCTIONS

Exercise 1

Install Ubuntu Server 18.04 in a virtual environment VirtualBox.

1. Download the installation image (ISO) for **Ubuntu Server** 18.04.5 LTS (64 bit version). Download the installation image to your scratch directory (/scratch/login_name) [storage path can be changed in Firefox settings].
2. Settings VirtualBox (File -> Preferences)
    1. Default Machine Folder: change to a subdirectory (of your choice) **in your scratch directory** (/scratch/login_on me)
3. Creating a virtual machine
    1. Machine name at your discretion, Linux, Ubuntu 64 bit, leave other settings at default values.
    2. Verify that a virtual disk has been created for you **in your scratch directory** (Settings: Storage, select a virtual disk from the list, verify the path specified in the "Location")

Exercise 1, continued

4. Virtual machine settings
    1. Network -> Attached to: NAT
    2. Network -> Advanced -> Port Forwarding
        1. Host Port: 2222
        2. Guest Port: 22
        3. Leave the rest unchanged
5. Start the virtual machine
    1. Choose installation media, choose installation ISO image.
    2. When installing **follow the instructions on the next page**.

Brief installation instructions

1. territory - Czech Republic (in Others -> Europe)
2. English keyboard (US) - do not use autodetection
3. machine name - any name (letters only, no accents)
4. Creating a user:
    1. username - any
    2. **login name - SAME* as on the WOLF cluster**
    3. password - preferably the same as on a WOLF cluster (not a condition), do not use the numeric part of the keyboard to enter the password
5. do not encrypt your home directory
6. use the entire disk without LVM
7. install **OpenSSH server** (selection is indicated by the key Space), if you forget to choose, it is possible to install later using:

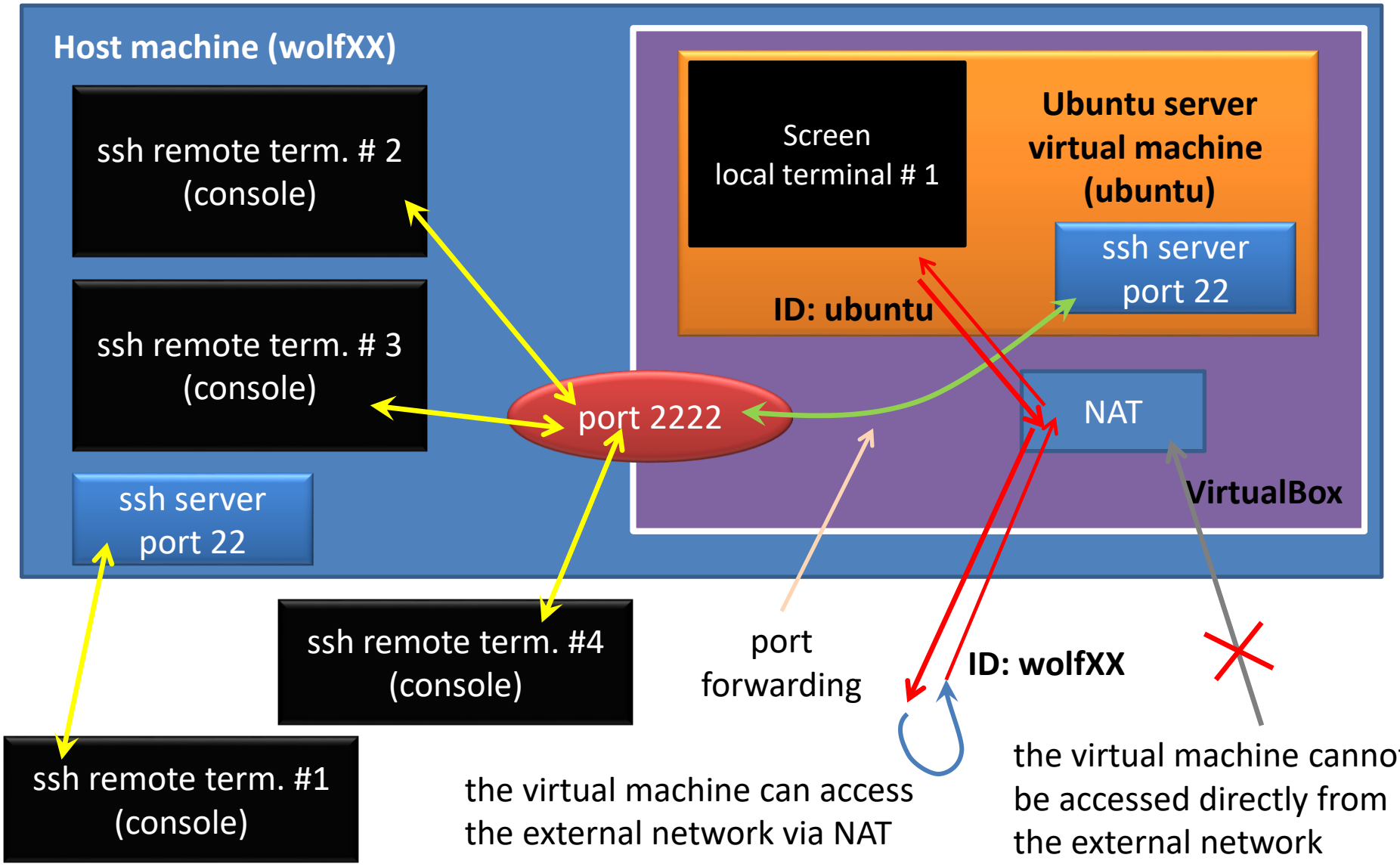
```
$ sudo apt-get install openssh-server
```

8. Grub install to MBR (Master Boot Record) equipment /dev/sda

* otherwise you will greatly complicate your life

Note: graphical interface can be installed via **ubuntu-desktop** package (we don't do it, it's time consuming and increases memory requirements of the virtual machine)

Virtual Network



Exercise 2

1. Log in to the running instance of the virtual machine through the graphical interface of the virtualization environment.
2. Log in to the running instance of the virtual machine using the program ssh from the host computer. Open several independent sessions.

```
ssh -p 2222 server_login@wolfXX
                or
ssh -p 2222 server_login@localhost
```

3. Using command **w** (or **who**) list the current sessions on the virtual machine.
4. Log in to the running instance of your virtual machine using the program ssh from node wolf01.

part "server_login@ " will be used if you created an account with a different login name during installation ("server_login" will be replaced by your login name in the virtual machine)

version with "localhost" must be started from the machine on which your virtual machine is running

Exercise 3

install a package (application) named **mc**
Package overview:
https://packages.ubuntu.com/

1. Install the program mc : `$ sudo apt-get install mc`
2. What is the program mc for?
3. Shut down the server: `$ sudo poweroff`
4. Turn on the server.
5. Create snapshot of the virtual machine (Machine->Take Snasphot ...)
6. Log in interactively as superuser ($ sudo su -)
7. What is NAT?
8. Install the package "pi“. What is it used for?