

VIRTUAL CLOUD INFRASTRUCTURE

Session 1 (3h) General intro IaaS, SaaS, PaaS + Intro virtualization

Session 2 (4h) Heavy/light virt + Lab Virtualization Vagrant/Docker

Session 3 (4h) Docker Networking: course + lab

Session 4 (3h) Lecture on Software Defined Networks (SDN)

Session 5 (3h) Exam (Multiple Choice Questions) (1h) + Presentation of research papers.

Session 6 (4h) Lab 1 SDN

Session 7 (3h) Lab 2 SDN

Session 8 (3h) Final exam

Grading:

- 15% on lab reports, 35% on intermediate exam (multiple choice questions), 50% on final exam.
- Intermediate and final exams will have questions on the labs and courses.

2022



CLOUD COMPUTING

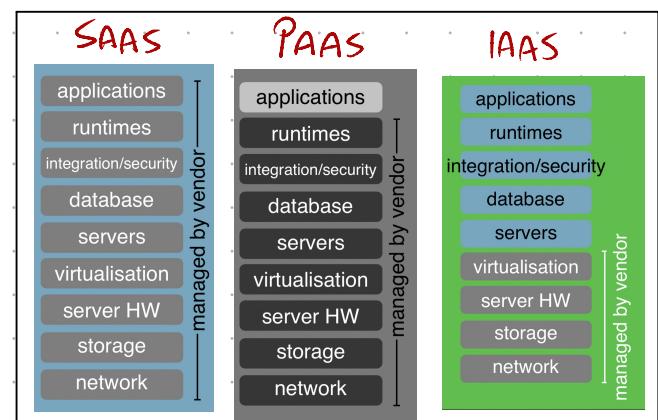
- **ON-DEMAND SELF-SERVICES** → You choose your services with no human intervention
- **BROAD NETWORK ACCESS** → availability over the network
- **RESOURCE POOLING** → aggregate hardware together in threat as a unique (DATACENTERS)
- **RAPID ELASTICITY** → fast (de)allocation and scalable to infinity of resources
 - ↳ **VERTICAL ELASTICITY**: give more resources to running systems
 - ↳ **HORIZONTAL ELASTICITY**: use multiple redundant VMs to balance the LOAD

ASS a service

- **Software AAS** → remote access to a commercial software (API, web access, ...)
- **I(Infrastructure) AAS** → low level resources over you have complete control
- **P(Postgres) AAS** → for developers who don't want to care about resources/network/os

- PUBLIC
- PRIVATE
- HYBRID

What's managed
by whom?



VIRTUALIZATION

Hypervisor
(VM: virtual machine)
monitor

TYPE OF
VIRTUALIZATION

- Mediator between physical resources for multiple OSs
- **BARE-METAL** → Hypervisor sits on the hardware, Boot on HV as an OS
- **HOST BASED** → Hypervisor is a software (QEMU)
- **FULL VIRTUALIZATION** → Direct HV support
- **PARA VIRTUALIZATION** → Part of the kernel is patched to interact with the HV
- **HARDWARE ASSISTED VIRTUALIZATION**

CONTAINER BASED VIRTUALIZATION

- Share the OS among VMs instead of using HV
- A container is a set of isolated Linux processes