SIIN931	Virtualized Infrastructure in Cloud Computing	CM 11h	TD 18h	HNE 21h

Cours proposé dans la mineure / *Course offered in the minor* :

AL	CyberSec	IA-ID	IHM	IoT-CPS	Ubinet	IF	M1 EIT DSC	M2 EIT DSC	M2 Fintech
					x		x	x	x

Responsable / *In charge of* : **Urvoy Keller Guillaume** (Guillaume.URVOY-KELLER@univ-cotedazur.fr)

Résumé / *Abstract* :

This course first sheds light on core technologies behind cloud computing, namely heavy (hypervisors-based) and light (containter-based) virtualization of application and services, as well as the virtualization of the network with Software Defined Networking (SDN). The technologies, e.g. the challenges faced when developping an hypervisors or the core concepts of SDN as compared to traditional networking solutions will be introduced in details and illustrated with dedicated labs

Prérequis / *Prerequisite* :

Good background both in operating systems and networking from a theoretical (core functions of an OS or TCP/IP networking stack) and practical perspective (management of a Linux machine).

Objectifs / *Objectives* :

- Understand the core concepts of heavy and light virtualization system designs
- Aquire practical skills on hypersors, containers and SDN

Contenu / *Contents* :

- 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

Références / *References* :

- Bugnion, Edouard, Jason Nieh, and Dan Tsafrir. "Hardware and software support for virtualization." Synthesis Lectures on Computer Architecture 12.1 (2017): 1-206
- Laurent Bernaille blog: https://blog.revolve.team/author/lbernail/

Acquis / *Knowledge* :

- Mieux comprendre les mécanismes de synchronisation et de concurrence à différents niveaux : de l'architecture matérielle aux modèles de programmation concurrents

Evaluation / *Assessment* :

- Labs : 15 %
- Mid term multiple choice questions : 35%
- Final exam