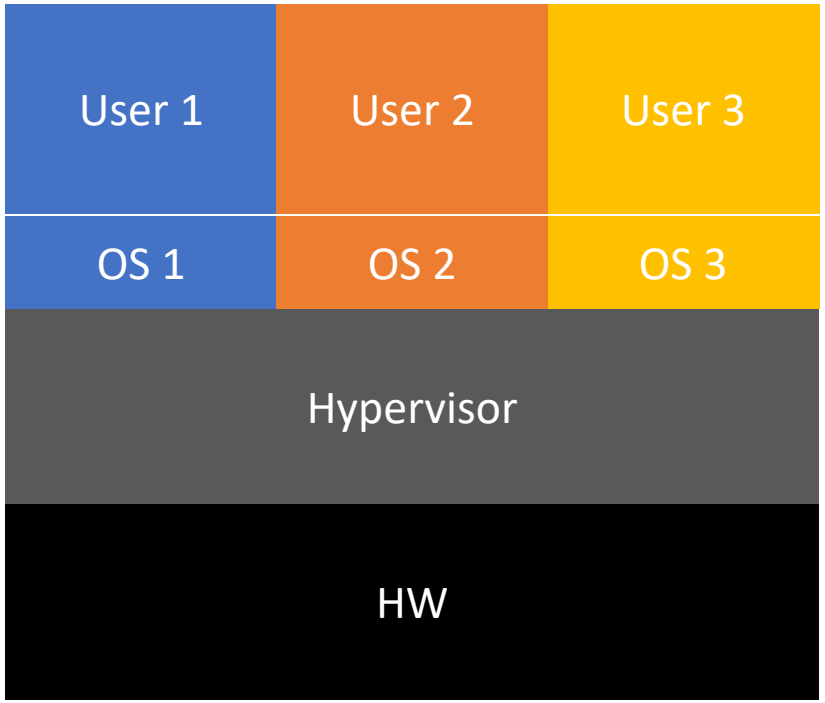
Examining Co-residency in clouds: How safe is your neighbourhood in clouds?

Introduction: What is co-residency?

- One of many side channel attacks
- Multiple users sharing the same physical resources –



Key Technology – Cloud Sim

- Java Framework, support for modelling and simulation of (CLOUDS Laboratory, 2017):
  - Large scale Cloud computing data centres
  - Virtualized server hosts, with customizable policies for provisioning host resources to virtual machines
  - Application containers
  - Energy-aware computational resources
  - Data centre network topologies and message-passing applications
  - Modelling and simulation of federated clouds
- Support for user-defined policies for allocation of hosts to virtual machines and policies for allocation of host resources to virtual machines

Aims/Objectives

*To identify the optimal technique/policies for allocation of host resources in the cloud in a **practical** manner.*

- Gain familiarity and competency in using the Cloud Sim framework by the end of semester one.
- Identify five different allocation techniques/policies by the start of semester two.
- Over the course of the project, improve my understanding of how cloud resources are allocated.
- By the conclusion of the project, be able to identify some of the key security considerations for provisioning Virtual Machines in the cloud.

Action Plan / Progress Thus Far

Research Phase

Simulation Phase

Evaluation Phase

- Current stage
- Investigating existing research –
  - CloudSim: a toolkit for modeling and simulation of cloud computing environments and evaluation of resource provisioning algorithms
  - Virtual Machine Security Scheme against Co-Resident Attack in Cloud Computing
  - Evaluating the Probability of Malicious Co-residency in Public Clouds
  - Experimenting on virtual machines co-residency in the cloud: a comparative study of available test beds

Action Plan / Progress Thus Far

Research Phase

Simulation Phase

Evaluation Phase

- Next stage
- Begin utilising Cloud Sim to create simulations around different allocation techniques found from research phase
  - For example use the recommendations from “Evaluating the Probability of Malicious Co-residency in Public Clouds”
  - Identifying and making use of ***typical*** cloud sizes and allocation policies that can then be used in my simulations.

Action Plan / Progress Thus Far

Research Phase

Simulation Phase

Evaluation Phase

- Final stage
- Draw conclusions from simulations

Questions?

References

- CLOUDS Laboratory. (2017). *CloudSim: A Framework For Modeling And Simulation Of Cloud Computing Infrastructures And Services. Available*: http://www.cloudbus.org/cloudsim/. Last accessed 30th Oct 2017.