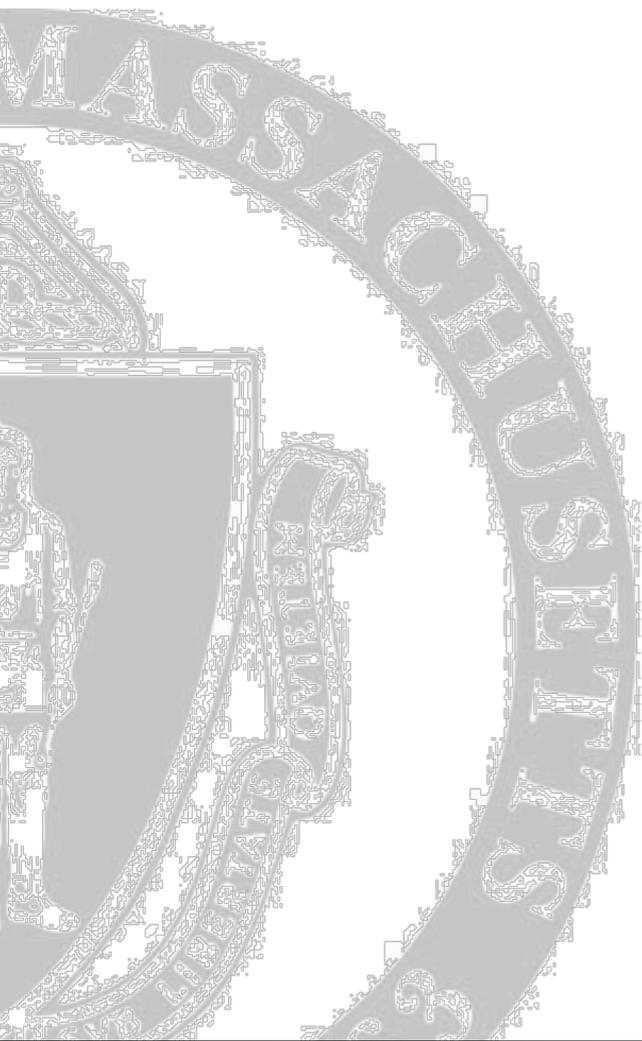


CMPSCI 377: Operating Systems

Discussion 12



Administrivia

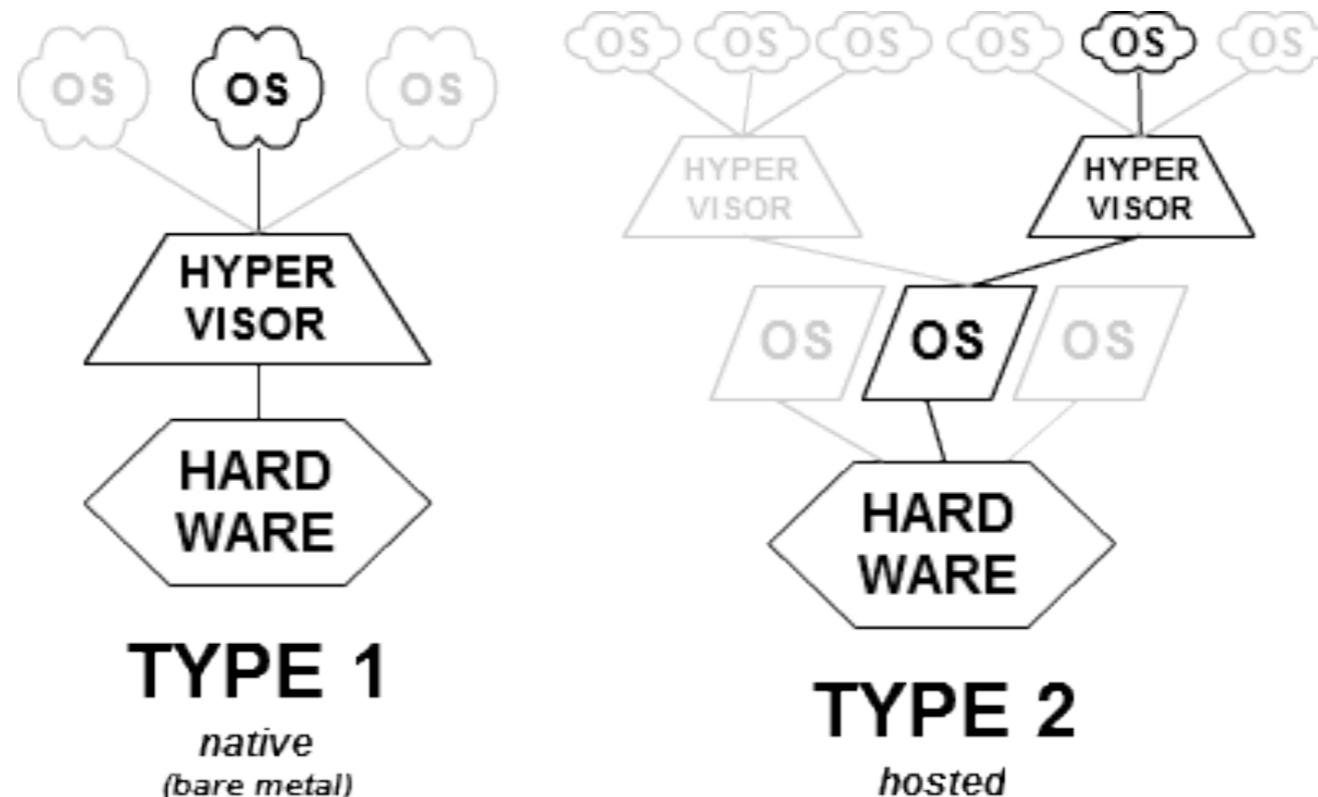
- Still missing a few EC2 logins
- Lab 3 due dates
 - Lab due Friday
 - Paper due Monday
- Today's agenda
 - Virtual machines
 - Lab 3
 - Evaluations

Virtual Machines

- What is **virtualization**?
 - Presenting the interface of some system on a different system (e.g., Windows on a Mac OS system)
- What is a **virtual machine**?
 - The simulation of a given system in a virtualized environment (e.g., an instance of Windows running on a Mac)
 - Benefits: VMs are portable and flexible
- In a virtualized system, the **hypervisor** manages a set of active virtual machines

Hypervisors

- What's the difference between a **Type 1** and a **Type 2** hypervisor?
- Type 1 ("bare metal") – hypervisor runs directly on the hardware
- Type 2 ("hosted") – hypervisor runs within an OS



Lab 3 – Synchronization

- Is the below code safe? Why or why not?

```
1 // client 1
2 server.buy("Operating System Concepts", 1);
3
4 /***/
5
6 // client 2
7 server.buy("Operating System Concepts", 1);
8
9 /***/
10
11 // server
12 public int buy(String bookTitle, int numCopies) {
13     synchronized(bookTitle) {
14         // purchase copies, etc.
15     }
16 }
```