

Virtual Machines: Concepts and Applications

Homework Assignment 1

1. [2 points] Suppose we have three programs that we want to run on a machine with a different instruction set. Discuss the pros and cons of running each application on a process VM versus running all of them on a system VM.
2. [2 points] Suppose a microprocessor company wants to make changes to its instruction set by removing some redundant instructions to make the hardware more efficient. However, for economical reasons, backward compatibility must be maintained. What are the options that this company has?
3. [2 points] Suppose that you have a VM that emulates machine A, but you also have access to machine A itself (i.e. the physical machine). What are the circumstances where you will want to use the VM instead of the physical machine?
4. [4 points] What is profiling? Is it needed in virtual machines? If not, why not? If yes, justify.
5. [10 points] Make a table that lists 5 different virtual machines. One column is the name, the second column is the guest, the third column is the host, and the last column is the type of VM (process or system).