

**CS 6847 : Cloud Computing**  
**Assignment 8 : Security Issues with Hardware Virtualization**

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**Q.** What additional security issues are introduced by "Hardware - Virtualization layer - OS" stack as compared to "Hardware-OS"?

**Ans.** Following are additional security issues introduced by “Hardware - Virtualization layer OS” stack:-

1. As the hardware is virtualized into software to produce the behavior of desired machine architecture, the software can be accessed by non authorized users which and can be copied to another location. It leads to issue of security of content in the package.
2. The architecture of virtualization includes multiple Virtual Machine's and one VM manager which manages execution of all the Virtual Machine's. When a system call is made by VM, it is responsibility of VM manager to convert it into corresponding system call to execute it. Thus, VM manager can be designed incorrectly execute the instructions or to interpret the system behavior based on call's execute by itself.
3. Virtual Machine Manager even if working correctly, sometimes when emulating the system behavior leads to very inefficient processing and hence poor system utilization. For example, in certain systems system calls are executed by kernel thread which is idle and waits for the request to receive but when emulated leads to one idle running thread all the time and hence poor utilization.