Virtualization

Issues

- Sharing cores, memory and caches
- Getting symbolic information in host from guest
    - Both kernel and user codes
- Exposing correct CPU model and type
    - Needed by guest to select correct libraries
    - Manage privileges of instructions

Virtualization of HWC

Linux: Guest executes write to MSR

Trap to hypervisor, which sends to host

Host sets up events, sends them to VM

VM thinks no multiplexing, but host may do it

Scaling needed by host (not done right)

Guest may preempt host measurements

Host gets wrong answers

Experiments show these problems

Difficulties in interpreting measurements

Measurements of Workloads

Running workload on native vs. virtual machines

    Measure net running time

    Then add more workloads in machine

    Then add more virtual machines and workloads

Measurements of VM system

Is time sufficient to characterize?

Do we need HWC for measurements?