Graduate Operating Systems

Fall 2017

Paper “Architecture”

- Interoperability, impregnability, versatility
- Interfaces (ISA) & abstractions (files)
- Virtualization vs. abstraction
- Architecture vs. implementation
- ISA, ABI, API
- Process vs. system
Paper “Architecture”

• Process VM = execute individual process
• System VM = complete system environment
• Guest, host, run-time, VMM

Paper “Architecture”

• Process VM
  – Replication: multiprogramming
  – Emulation: different HW, interpretation, dynamic binary translation (+ cache)
  – Optimization: same-ISA optimizers
  – High-level language VM
Paper “Architecture”

- System VM
  - Multiple, isolated guest OSes
  - Isolation, platform replication
  - Classic system VMs
  - Hosted VMs
  - Whole-system VMs
  - Multiprocessor virtualization
  - Codesigned VMs