Graduate Operating Systems

Fall 2018

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

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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