Virtual Machines in Teaching

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Driving Factors

- Desire for students to not be locked into a particular system or application.
- Student desire/demand for exposure to multiple systems.
History

- 2 years triple booting OSX/Win/Ubuntu
- Rebooting process frustrating to some
- AD bind issues
- 3 years running Parallels
- Fine for single user machines
- Slow startup times due to snapshoting configuration
- Inflexible deployment solutions
Goals

• Multipurpose labs. i.e. a move away from “specialised” labs which required certain courses to be in certain rooms.
• A better student experience when compared to Bootcamp
• Allow students to have their own (portable)instance of any VM.
Goals

• Allow students Administrator privileges to the virtual machine.
• Rapid deployment of a new VM during class without administrator privileges
• Allow students to have their own instance of any VM to build/develop throughout a semester.
VMWare Fusion

- Strong background in enterprise deployments (ESX, Workstation etc.)
- Various lab configuration options
- Cost - VMWare is free for labs and student use under the VMWARE Academic Program, http://www.vmware.com/partners/academic/program-overview.html)
Our Setup

- Uses a read only “base” system which users never directly sees/uses
- Clones with only basic/minimal info are created which reads from the base system. (10-20mb depending on OS)
- Clones are embedded in user profiles for immediate access, and also in Shared folder for users to redeploy.
Our Setup

Base VM
VM Clone in User Profile
Clone Repository
User Instance

Hidden
Read Only/Shared
Full Control

System
User

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Our Process

- Create VM as per normal
- Move VM Disks to desired location.
- Modify VM Master/Config Disk to reflect new location of disk set
- Create a new virtual machine for the “clone”
- Replace VMDK file in clone with VM Master/Config disk
Our Process

- Create Snapshot of clone.
- Modify clone Configuration file as required.
Useful Bits....

• Edit the clone VMX file:
  • Remove ethernet0.generatedAddress
    - depending on VM network config
  • skipAntivirusCheck = "TRUE"
  • msg.autoAnswer = "TRUE"
  • uuid.action = “keep” - Critical if Win7 otherwise activation reset will occur.
What’s Next?

• 2>3 years moving to a cloud based architecture.
Questions?