



# **World 2011**

# 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 snapshotting 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

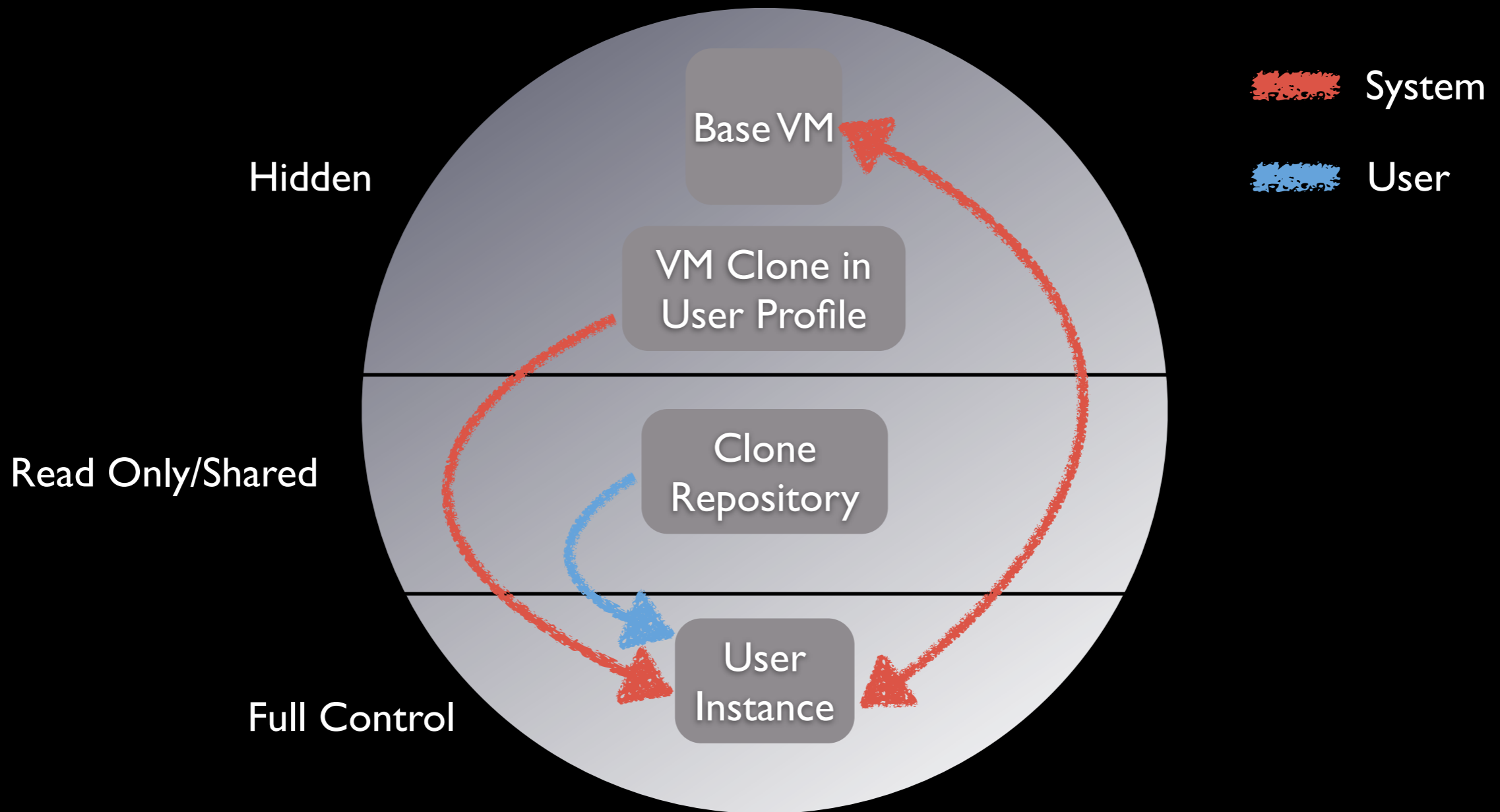
- Strong background in enterprise deployments (ESX, Workstation etc.)
- Various lab configuration options
- Cost - VMWare is free for labs and student use under the VMWARE Academic Program, <http://www.vmware.com/partners/academic/program-overview.html>)

# 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



# 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>3years moving to a cloud based based architecture.

# Questions?