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BP112
Speed Up Your Development and Testing with Virtual Machines

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IBM

Agenda

- What is a Virtual Machine?

- Virtualization Options

- VMware Overview

- Why use a virtual environment?

- Clones and Snapshots

- VMware Teams

- Lotus Software Scenarios with VMware

- Getting Started

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What is a Virtual machine?
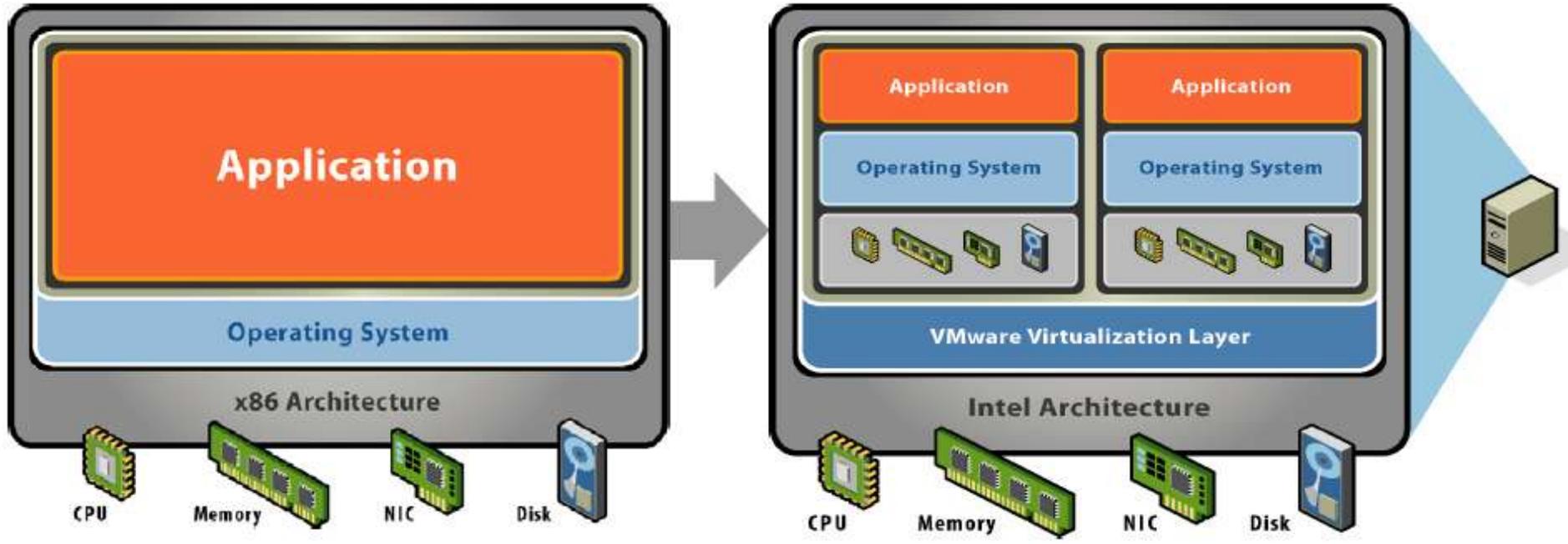
- You may have previous experience…

Virtualization Options

- Microsoft Virtual PC

- Oracle VM (XEN)

- Parallels

- VMware

- XEN

- Many more

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VMware Overview

- Hardware virtualization - a complete x86 platform

- Run multiple OS's on the same physical machine

Key VMware Versions

- **VMware Player - Free**
  - Run virtual machines on Windows or Linux
  - Intel based

- **VMware Fusion - $**
  - Macintosh Version - Primarily intended to run Windows
  - Multiple Snapshots

- **VMware Server – Free**
  - Formerly GSX Server $$
  - Create and run virtual machines on Windows or Linux
  - Intel Based
  - Single Snapshot

Key VMware Versions (Continued)

- VMware Workstation - $
    - Create and run virtual machines on Windows or Linux
    - Intel Based
    - Multiple Snapshots
    - Multiple Monitors

- VMware ESXi – Free
    - Formerly VMware ESX Server - $$$$$
    - Bare Metal
    - Multiple Snapshots
    - No Audio, No USB
    - Less Hardware support
    - IBM Supported

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Key VMware Versions (Continued)

- **VMware Infrastructure - $$$$**
  - ▸ The motherload…
  - ▸ ESX Server
  - ▸ VMotion
  - ▸ IBM Supported
  - ▸ Plus more…

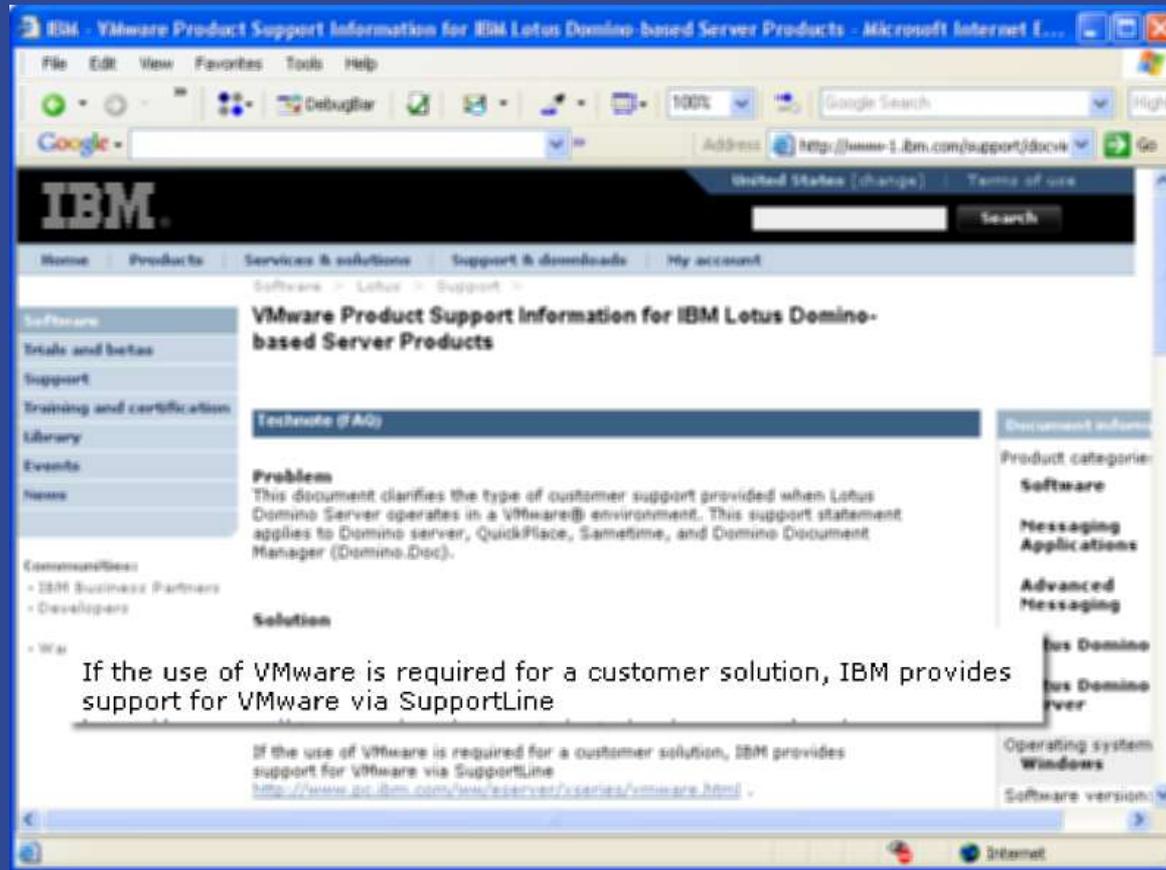# Why use a virtual environment?

- Develop and test multiple Domino/Notes versions on a single PC

- Connect virtual machines to simulate and test multi-tier configurations

- Use multiple snapshots to facilitate testing

- Archive test environments on file servers where they can be easily restored/shared

- Less need to keep buying hardware or format clean machines

Why use a virtual machine? (Continued)

- Configure virtual machines to "undo" all changes at shutdown

- Demo complex or multi-tier configurations on a single laptop

- Test older Domino Server versions within virtual machines

- Crash a server and not impact other developers

- Test how applications perform with poor network connectivity

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No 1 Reason ?

- It's supported!!!!*

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Why the * ?

- Only VMware ESX/ESXi Server is **officially** supported, not:
    - VMware Workstation, Fusion, GSX, MS Virtual PC, XEN etc.

- IBM will assume that the problem is common to both native and VMware environments, and IBM will only require the customer (or the VMware SupportLine team) to recreate the problem if there is an indication that the problem may be unique to the VMware environment.

VMware Basics Demonstration

- Starting

- Stopping

- Switching

- Multiple OS's

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Performance Tips #1

- **Pre-Allocate Disk Space and install on a recently defragmented drive**

- **Install VM Tools**

- **Create VMs on a different partition to the Host OS/Swap file.**
    - ‣ Can make sense to store VM images on fast external USB/ Firewire/eSata drives

- **Turn off hardware devices that are not required in the VM**
    - ‣ USB ports, Sound Devices, Floppy Disks, CDs etc.

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Clones, Templates and Snapshots

- **Clones**
  - ▶ Create identical duplicates

- **Templates**
  - ▶ Protect an image from changes

- **Snapshots**
  - ▶ Capture and manage point-in-time copies of a running virtual machine state

What's the 'Clone of the Day'? Same as yesterday.

Clones

- Clone a VM to easily deploy many copies of a fully configured VM with OS and applications

- You can do anything with a clone that you could with the original VM

- Clones may be linked or full
    - Full Clone - independent copy, shares nothing with the parent after the cloning operation.
    - Linked Clone - a copy of a VM that shares virtual disks with the parent VM in an ongoing manner. Conserves disk space

Clones (Continued)

- The Clone virtual machine Wizard automatically copies all files and settings required

- The Clone virtual machine Wizard automatically creates a new MAC address and other unique identifiers for the duplicate virtual machine

  ‣ To create a "true" clone with same MAC address etc. use OS File copy.

Templates

- Template mode ensures that users will not change the virtual machine

- Virtual machines used in linked clones should NOT be changed. When the virtual machine is in template mode, it cannot be deleted or added to a team, and the virtual machine's snapshots cannot be deleted.

- **Note:** To protect the template, set the file to read only or remove write permissions for the virtual machine's files. This precaution prevents inadvertently deleting a virtual machine through the file system, or from disabling template mode for a virtual machine

Snapshots

- Captures the entire state of the VM:
  - Memory state
  - Settings state
  - Disk state

- Return to it at any time.

- Facilitates repetitive testing and debugging
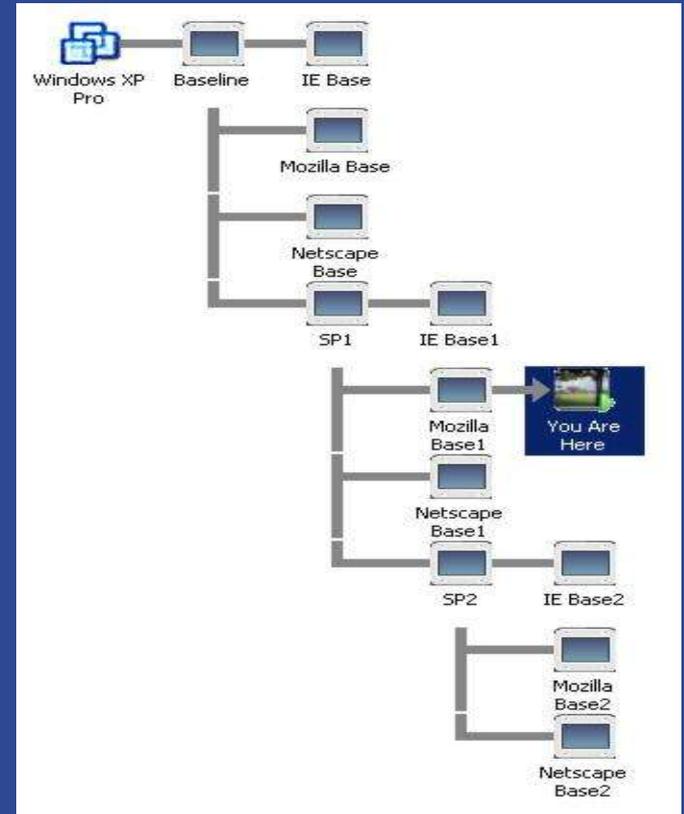
Clones and Snapshot Demonstration

- Creating a clone

- Avoiding conflicts

- Using Snapshots

- Reverting Snapshots

Performance Tips #2

- Defragment drives - inside to out before cloning or making templates

- Try and create snapshots to be a vertical tree as opposed to a horizontal one

- Create new VMs from physical machine backups using VMware Converter.

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Teams

- Manage connected virtual machines

- Create "real world" network connections between virtual machines

- Perform power options across all the virtual machines in a Team

Teams (Continued)

- View all virtual machines on one screen

- Suspend and Resume

- Note: To take snapshots of multiple VMs requires a snapshot of each team member.
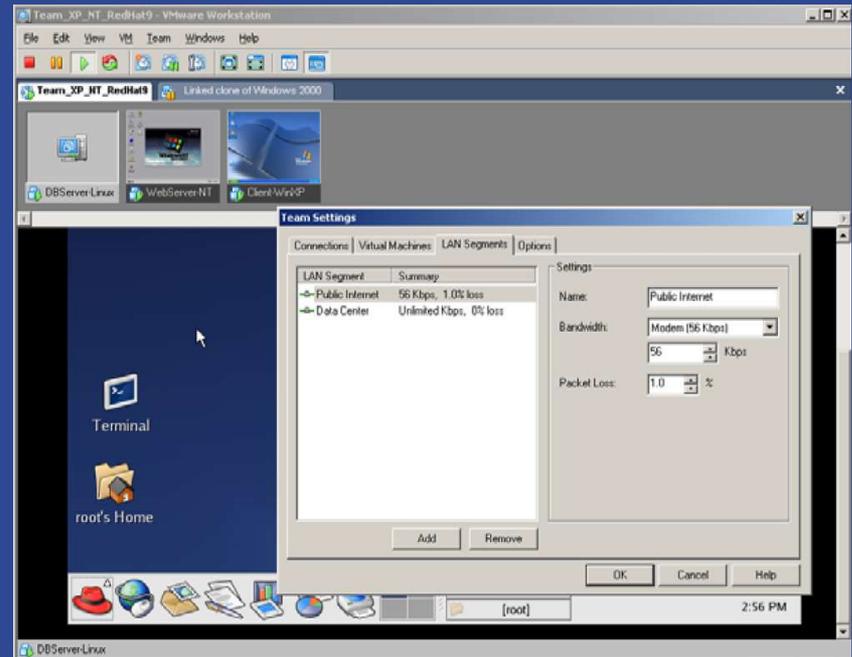
Teams and LAN Segments

- Bandwidth – Modify network bandwidth

- Packet Loss - specify the efficiency of the link

- Note: Settings become active for a given VM only after a power on, reset, or resume.
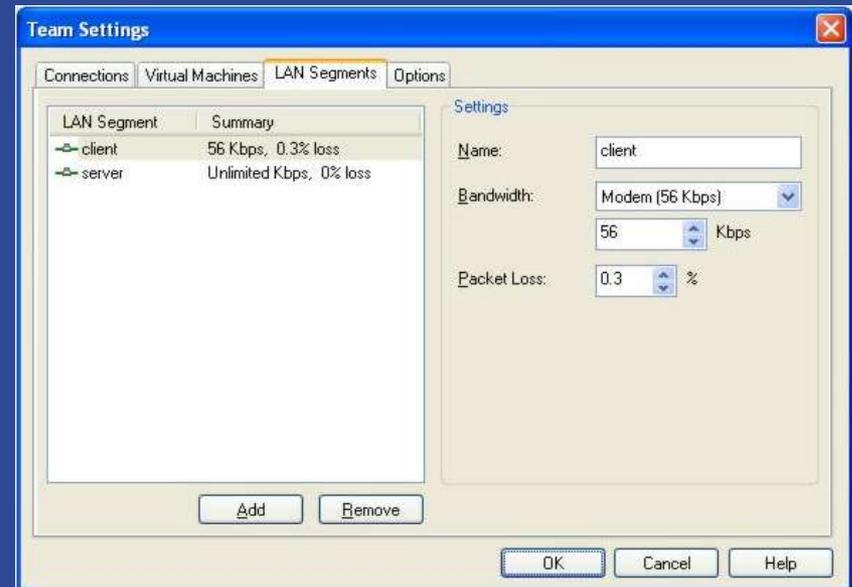
Lotus Software Scenarios with VMware

- Testing different Notes client versions

- Testing Domino apps on different Operating Systems

- Testing slow network connections between clients and servers

- Testing Cluster Failover

Teams Demonstration

- Creating a Team

- Adding VMs

- Starting/Stopping

- Changing Network Settings

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Performance Tips #3

- Configure the VM to start with the CD/DVD optical drive disconnected

- Avoid running dual-processor VMs on a single-processor host

- If possible, run all the VMs RAM in real RAM, avoid swapping.

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Getting Started

- **VMware Player – Free!**
  - ▸ Cannot build VMs but can use any WMware image and Microsoft Virtual PC and Symantec LiveState Recovery disk formats.

- **VMware Server – Free!**
  - ▸ Build VMs
  - ▸ Supports multiple processors
  - ▸ Supports Running as a service

- **VMware ESXi – Free!**
  - ▸ Dedicate hardware
  - ▸ Supported

- **VMware Workstation - $189**

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Getting Started (Continued)

- Virtual Appliance Marketplace
  - Certified
  - Production Ready
  - No Install
  - Instant on

- http://vam.vmware.com

Getting Started (Continued)

- **Useful Resources**
  - ‣ IBM Redbooks
    www.redbooks.ibm.com

  - ‣ VMware Blog
    blogs.vmware.com

  - ‣ IBM Developer Works
    www.ibm.com/developerworks/

  - ‣ VMware Virtual Appliance Marketplace
    vam.vmware.com

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Questions??

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  - http://www.epilio.com/web/freedownloads.htm

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