



## Utilising Virtualisation to Enhance your ALM Capabilities

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## Why Virtualize?

- Save Money
- Save Energy
- Greater Utilization
- Flexibility
- Lower TCO



## What does Microsoft offer?

- Virtual PC/Virtual Server
  - Windows Virtual PC for Windows 7
- Hyper-V
- MED-V
- App-V
- Remote Desktop Services



## What are we going to focus on?

- Hyper-V
- Enterprise grade, type-1 hypervisor
- Most items on the previous slide support Hyper-V in one way or another
  - Some you'll want to avoid long term



## Hardware

- Processor Requirements
  - Hardware-assisted virtualization
    - Intel VT or AMD-V
  - Hardware-enforced Data Execution Prevention
    - “No Execute Bit”
  - You want SLAT support
    - Intel calls it Extended Page Tables (EPT)
    - AMD calls it Nested Page Tables (NPT)



## Sockets vs Cores

- Logical Processors
  - Hyper-V Supports 64 logical cores today
- Virtual Processors
  - Up to 4 max on supported Oses
- Single host can support 384 running virtual machines
- Up to 512 virtual processors per host



## Memory

- Naturally, more is better
- Depending upon version of Hyper-V
  - Up to 1 TB of RAM is supported on hosts
  - Guests up to 64 GB per VM
- Memory must be ECC for support



## Network

- Supports speed of host NIC
  - 10 GB supported
- Jumbo Frames support added in R2 for guests



## Storage

- Hosts support all types of storage
  - Direct attached storage
  - iSCSI
  - Fibre Channel
- Guests can use virtual hard disks or pass through to DAS or SAN LUN



## Hypervisor

- Windows Server 2008 R2
- Hyper-V Server 2008 R2
  - While you can use Windows Server 2008, not recommended



## New in SP1

- Dynamic Memory
- RemoteFX



## Supported Clients

- Windows Server 2008 R2 and Windows 7 make the best guests
- TechNet lists supported clients
  - [http://technet.microsoft.com/en-us/library/cc794868\(WS.10\).aspx](http://technet.microsoft.com/en-us/library/cc794868(WS.10).aspx)



## High Availability

- Hyper-V in the R2 release supports Live Migration
- Ability to move in near real-time VMs from one host to another
- Requires shared storage

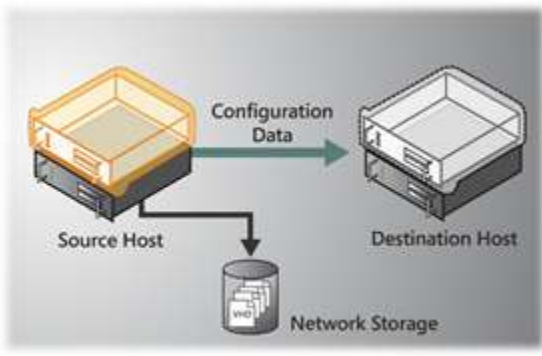


## Failover Cluster Requirements

- Must use processors of the same manufacturer and same type
  - No AMD to Intel (or vis-à-vis)
  - Can use processor compatibility for family differences
- Same TCP/IP subnet
- Must have access to shared storage



# Live Migration: setup

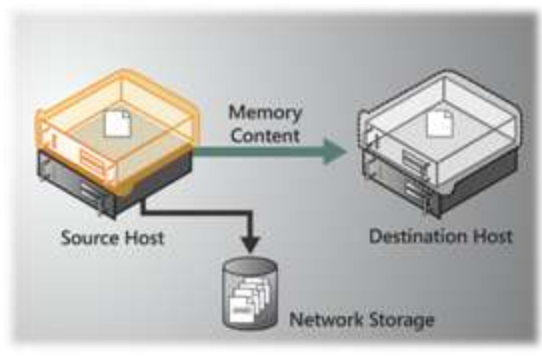


Images source: Live Migration White Paper

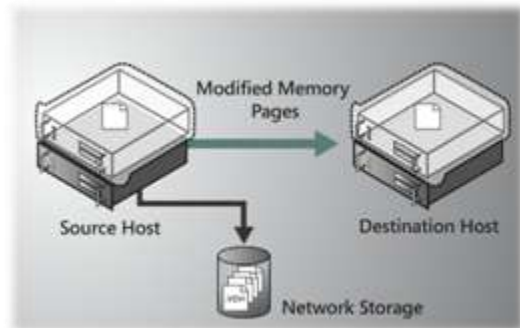
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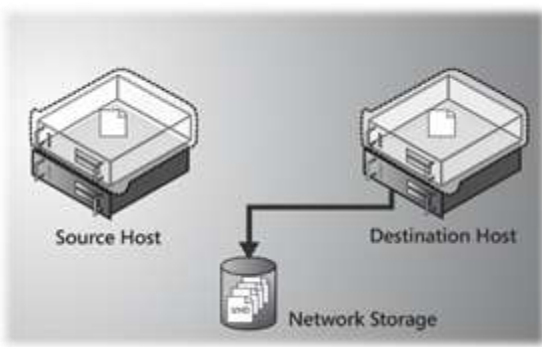
# Live Migration: Mem Pages x-ferd



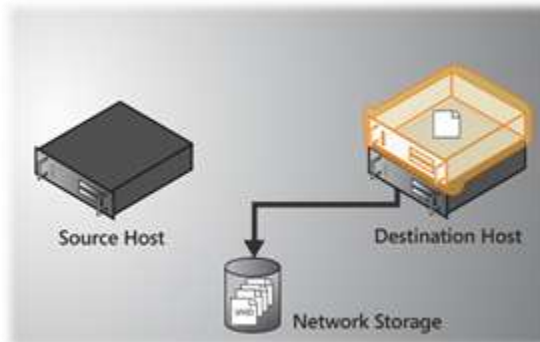
# Live Migration: Mod Pages x-ferd



# Live Migration: storage handle move



## Live Migration: back online



## Disaster Recovery

- Use Microsoft DPM 2010 for backups of VMs
  - Or alternative VM aware tools
- Backup manually entire VHD
- Virtualize at least one domain controller to help recover domain



## Management

- Hyper-V Console and WMI
- SCVMM 2008 R2 and PowerShell
- System Center Family
  - Full end to end *enterprise* suite
- Smaller shops
  - System Center Essentials 2010
  - System Center Essentials Plus 2010



## Tips

- Make sure you install ICs
- Watch processor thresholds
- Avoid using root partition
- Don't starve root partition
- Close console windows when not in use
- Disk response times major perf area
- Use pass-through disks



## What about Virtualizing TFS?

- Sure
- As you can see, I'm doing it here for the Microsoft Lab Management demos



VIDEO

## IS THIS HOW YOU KILL BUGS?



[Show in Browser](#)

View the **ALM** Conference



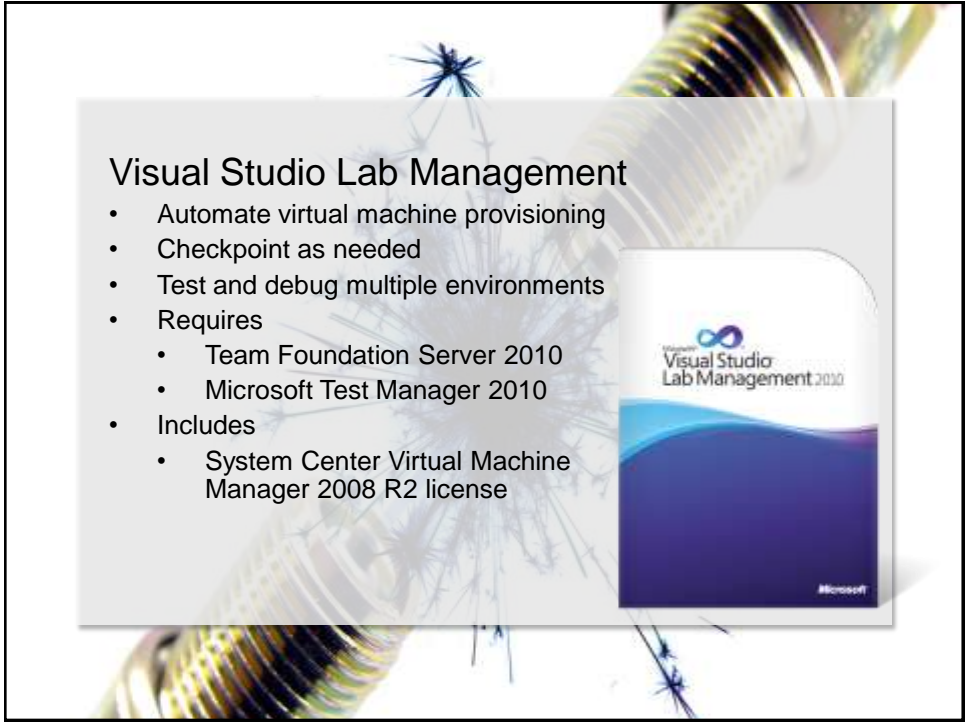
## Kick Start Your Team



### Team Foundation Server 2010


- Centralized hub for team
- Version control
- Bug tracking
- Test case management
- Build automation
- Required for Visual Studio Lab Management





### Visual Studio Lab Management

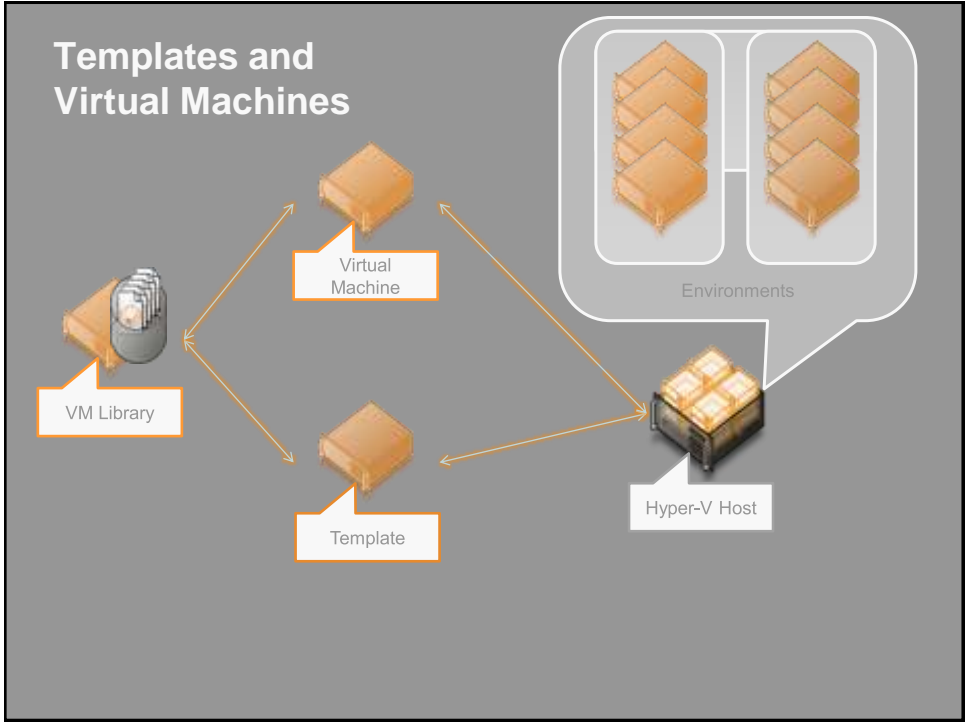
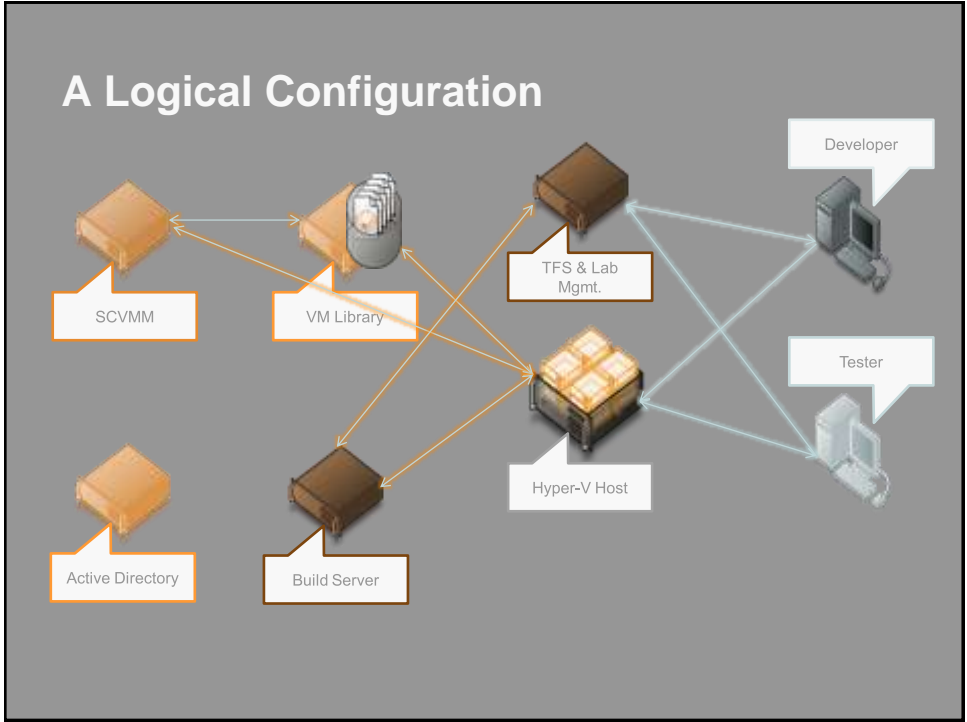
- Automate virtual machine provisioning
- Checkpoint as needed
- Test and debug multiple environments
- Requires
  - Team Foundation Server 2010
  - Microsoft Test Manager 2010
- Includes
  - System Center Virtual Machine Manager 2008 R2 license



### Visual Studio 2010 Ultimate

- Provides everything in one box
  - IntelliTrace
  - Microsoft Test Manager 2010
  - Architecture and modeling tools








Use Virtual Environments to Test and Debug

DEMO

**CONFIGURE AND USE ENVIRONMENTS**




The logo for the ALM Conference, featuring a stylized red and black icon to the left of the text "ALM Conference".



DEMO

**BUILD AUTOMATION**



The slide features a white background with a red wavy border at the top and a grey wavy border at the bottom. The text 'DEMO' is positioned above the main title 'BUILD AUTOMATION'. In the bottom right corner, there is a logo for the 'New Zealand ALM Conference', which includes a stylized red and black icon and the text 'New Zealand ALM Conference'.

**IntelliTrace® is your magic wand**



Demo

**FIND AND KILL BUGS QUICKLY**





# Thank you!

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