



**Surgient®**

# **Test Lab Automation Using Virtualization**

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# The Short Version

- ▶ Manual configuration of test infrastructure is extending test cycle time, impacting quality
- ▶ Virtualization can consolidate infrastructure and reduce time spent manually configuring systems
  - Virtualization by itself is not a complete solution
  - **Virtual labs** are applications that extend and automate virtual infrastructure environments
- ▶ **Virtual labs** allow self-service access to complex computing infrastructure, on-demand
- ▶ **Virtual labs** enable both IT and testing organizations to save time and resources allowing you to keep pace with those ever shrinking deadlines

# Is This You?



# Why are you losing sleep?



Software and hardware systems **complexity** is **increasing**

- N-tier applications
- Distributed
- Services oriented
- Open source

# Why are you losing sleep?



The number of **test cases** is **increasing**

- More systems
- More devices
- More network boundaries
- More components
- More things to test!

# Why are you losing sleep?

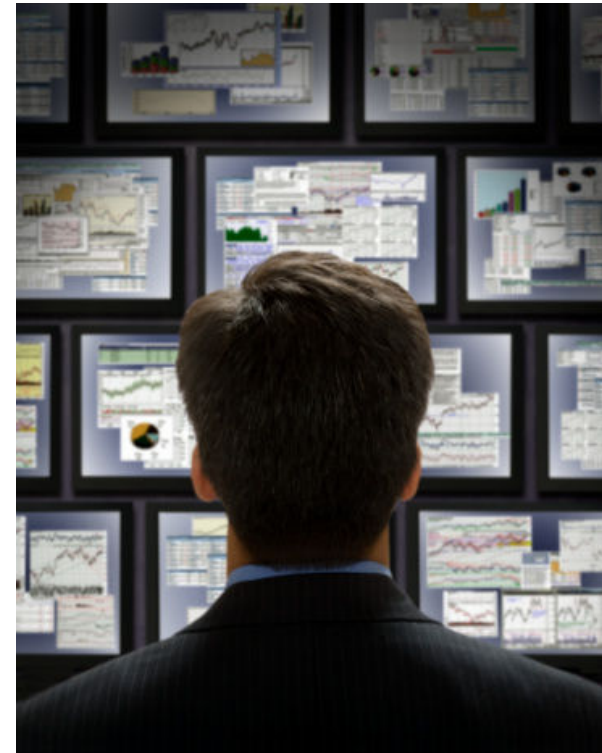


Increasingly large  
and **distributed**  
**teams**

- Cross-functional teams
- Remote offices
- Contractors
- Outsourcing
- Offshore

# A Lot of Moving Parts

- ▶ Hardware systems
- ▶ Operating systems
- ▶ Clients
- ▶ Servers
- ▶ Runtime systems
- ▶ Input data
- ▶ Databases
- ▶ Patches
- ▶ Upgrades
- ▶ Interacting systems/components
- ▶ 3<sup>rd</sup> party software
- ▶ Network connections
- ▶ Access privileges



# Does This Look Familiar?

## How to Create a Test Environment...

- Scrounge for hardware
- Find CD with correct operating system
- Download latest updates and patches
- Create representative test data
- Locate, find and install interacting components and systems
- Install additional 3<sup>rd</sup> party software
- Enable network connections
- Try to remember all the accounts and passwords
- And then see if it works



And if it doesn't work start all over again!

# The Net Result

- ▶ Test setup has become a serious bottleneck
  - Test **cycle times increasing**
  - Systems **cannot be developed and tested at a rate** that supports **business goals**
  - Systems are released with **inadequate quality**



# Current Approaches

- ▶ Manual configuration of lab machines
  - Requires enough capacity to support required testing
  - Requires IT support
  - Must be co-located with the test teams
  - Expensive, hard to manage



# Current Approaches

- ▶ Scripted Automation using Ghost or other
  - Fragile – breaks as systems change
  - Requires manual network and system configuration
  - Can't be used by testers
  - Can't scale to a large, distributed community



# Current Approaches

## ▶ Virtualization

- Divides a computer into multiple execution environments
- Provide isolated sandboxes for running applications
- Consolidate many under-utilized servers onto fewer machines
- Presents homogenous environments even on heterogeneous hardware
- X86 virtualization platforms include Microsoft Virtual Server, VMware GSX/ESX Server, XEN, others

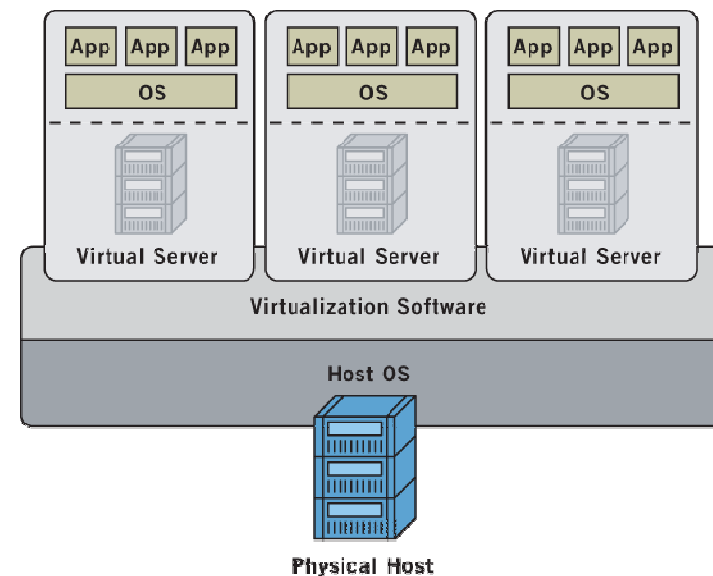


# Virtualization is Mainstream

- ▶ Virtualization market will grow to **\$15B by 2009!**
- ▶ More than **three-quarters of all companies with 500+ employees** today are **deploying virtual servers**.
- ▶ Customer **satisfaction is high**.
- ▶ Survey respondents currently using server virtualization technologies report that they expect **45% of new servers purchased next year will be virtualized**.
- ▶ More than **50% of all virtual servers are running production-level applications**, including the most business critical workloads
- ▶ Source: IDC

# Using Virtualization in Testing

- ▶ **Enable More Testing With Existing Resources**
  - Multiple applications and operating systems can be supported within a single physical system
  - Computing resources can be pooled and allocated based on business needs
- ▶ **Instant Test Sandboxes**
  - Virtual machines are completely isolated from the host machine and other virtual machines so if a virtual machine crashes, all others are unaffected
  - Data does not leak across virtual machines and applications can only communicate over configured network connections
- ▶ **Centralized Configuration Management**
  - Complete virtual machine environment is saved as a single file; easy to save, move, copy and restore
  - Standardized virtualized hardware is presented to the application to ensure compatibility

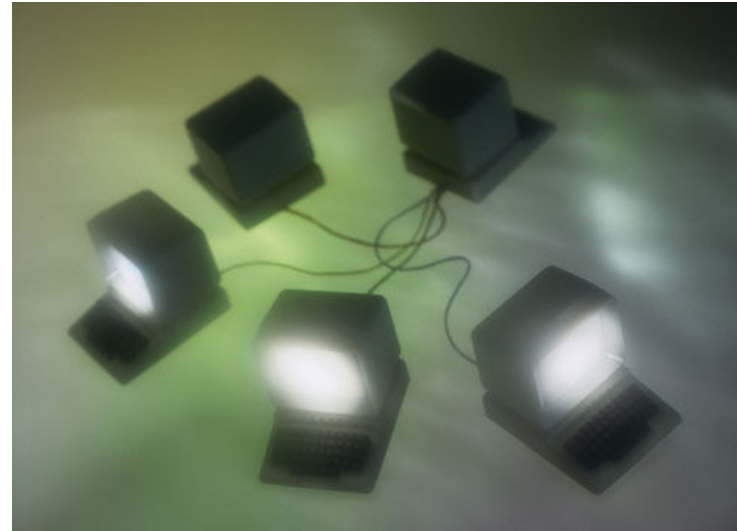


## But...Virtualization Has Limitations

- ▶ More machines (virtual or physical) requires **more management**
- ▶ **Tools** are **targeted at technical IT user** who is managing machines not application environments
- ▶ Most existing **tools focus on production workflows**
- ▶ **No understanding** of how to manage a **test lab** and sharing capacity among different test groups
- ▶ **No understanding** of **application architectures** and dependencies
- ▶ No support for **remote access** without compromising network security; no support for team collaboration
- ▶ **No understanding** of **test automation** and the needs of these **tools**

# What Is Needed?

- ▶ Ability to **deploy multi-server test configurations**
  - From any location via a **browser**
  - On a **scheduled or on-demand** basis
  - Simultaneously to **multiple users**
- ▶ Allow testers to “**self-serve**” these configurations
- ▶ **Share test capacity** across multiple test locations and organizations
- ▶ Easily **save and share test environments** for rapid defect resolution



# Virtual Lab Automation

- ▶ Self-service provisioning
  - Enables multiple test organizations to **share pool of test resource** capacity
  - **Monitoring, allocation and adjustment of capacity as needed**
  - **Detailed reporting** on lab usage and tracking
- ▶ Collaboration and workflow
  - **Browser access** from work, home, offshore locations
  - **Multiple deployment instances** of the **same test configuration** without conflict
  - **Resource scheduling and capacity planning**
  - **Snapshot environments** to rapidly collaborate and resolve defects
- ▶ Integration with Test Automation tools
  - Request **specific configurations** from **within test scripts**
  - Enables **fully automated test cycles**
  - Allows **standardized deployment of testing tools**



## What Can You Do With Virtual Labs?

- ▶ Gain capacity by **sharing test lab resources** across multiple locations
- ▶ Rapidly deploy **complex test sandboxes** in minutes vs. days
- ▶ Accelerate **configuration and functional testing**
- ▶ Automate **patch regression testing** of desktop configurations in just hours
- ▶ Enable help desk support **“break/fix” environments** to speed front line issue resolution

# The Bottom Line

- ▶ **Manual configuration** of test infrastructure is **extending test cycle** time, impacting quality
- ▶ **Virtualization** provides **part of the solution**
- ▶ **Virtual Lab Automation** applications, allow self-service access to complex computing infrastructure, on-demand
  - **Reduce** required **lab hardware**
  - **Reduce errors** by eliminating **manual configuration**
  - **Reduce** lab **administration overhead**
  - **Improve** team **collaboration**
  - **Improve** test **coverage**
- ▶ Virtual labs enable **both IT and testing organizations** to save time and resources allowing you to **keep pace with those ever shrinking deadlines**

**Not anymore!**



# About Surgient

- ▶ Virtual Lab Applications – *Putting Virtualization to Work*
- ▶ Founded May 2003
- ▶ 100 employees
- ▶ ~45 customers
- ▶ Venture-backed
- ▶ Award-winning applications
- ▶ Leading partners:  
Microsoft, EMC/VMware,  
Mercury, WebEx, Saba,  
ViewCentral

Information and Whitepapers

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# Surgient Customers





**Surgient<sup>®</sup>**

**Thank you!**

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