Desktop Virtualization for Higher Education

The Virtual Lab

[Images of a campus building and a student using a computer]
What is the Virtual Lab?
WHAT IS THE VIRTUAL LAB?

Transformational technology for Higher Ed labs – collaboration between Dell & VMware

Virtualize lab desktops for easier management

Or, consolidate labs by allowing students to access lab work on personal PC

A simpler answer
Possibilities of a Virtual Lab

- Campus Labs
- Student Devices
- Dell & VMware

VIRTUAL LAB

Multi-purpose
- Accommodate more uses, consolidate
- Reduce bottlenecks, optimize SW licensing & utilization
- Windows 7, XP, Vista, Linux

Available 24/7
- Access from anywhere, any device
- No need to travel
- Distance learning

Simplified Mgt & Security
- Simplified imaging & patching
- Less client HW for break-fix
- More security
So, why hasn’t everyone virtualized their labs yet?

Too many questions.

- Do I have room in my datacenter?
- Citrix? VMware? MS? Other?
- Application performance?
- ROI?
- Can my people manage unknown technology?
- Who are my users and how do I want to make things better for them?
Polling Question
The Virtual Lab

1) Adaptable Virtual Lab
Any image is accessible from any DT in any lab with just a single reboot

2) Mobile Virtual Lab
Any lab DT that is fully virtualized is accessible from any device from anywhere (on & off campus)

3) Hosted Virtual Lab
Access anywhere, but from servers in the Dell/Perot cloud rather than your datacenter.

All options tested with VMware View 4.0
How are we enabling the Virtual Lab today?

- Tested VMware technology with common HiEd SW packages:
  - Autodesk AutoCAD
  - ChemBio 3D, Draw
  - Adobe Director, Illustrator, Photoshop, Dreamweaver
  - VectorWorks
- Reference Architectures, White Papers

- OEM relationship between Dell & VMware
  - Joint participation in Customer Trials, deployment
  - Single point of support
  - On Premise and As-A-Service offerings
  - Information – driven customer decision processes

Proof of Concept Lab Testing

In-House Expertise
Multiple ways to deliver DT virtualization:
Options solve for constrained datacenters, limited upfront budgets, and in-house expertise

<table>
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<th>A flexible delivery model that suits unique needs and goals</th>
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<td><strong>Do It Yourself</strong></td>
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<td>Business Ready Configurations</td>
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We help you do it                                            We do it for you

Customer Managed                                            Fully offsite Dell managed

On Premise Dell managed
The virtual platform location ultimately depends on the current location of enterprise applications and long-term IT strategy.

**Customer Data Center**
- Enterprise applications are already hosted in a central campus data center, or there is a strategy in place to centralize.
- The institution intends to keep the existing data center for the foreseeable future.
- Security or control concerns dictate that data stay local.
- Application performance requires location in the customer data center.

**Dell Data Center**
- Data center facilities limited, large infrastructure outlay required.
- Enterprise applications are currently disbursed in many different locations.
- The customer wants/needs to get out of the existing data center.
- The institution wants to spread costs and make them predictable, rather than project-based.
Dell’s methodology gives you faster time to value

**Feasibility**
- Is the solution right for you?
- Demo – web based

**Discovery Workshop**
- Potential solutions and requirements?
- Trial – 10-15 users

**Assessment BluePrint**
- What is the best course of action and Benefits (TCO)?
- Fast start kit ~ 100 users

**Propose**
- Proposal. Need to scale?
- Pilot ~ 200 users

**Implement**
- Data migration and delivery program
- Production

**Operations**
- Monitor and Maintain
- Production

**1 Hours**
- ½ - 1 Full Day
- 3-6 Weeks
- 2-4 Weeks
- Variable

Information driven process with you in control
Polling Question
VMware View & ThinApp Benefits for the Virtual Lab
Gartner: “VMware is the Clear Market Leader”

“VMware stands alone as a leader in this Magic Quadrant”

• “VMware is clearly ahead in”:
  – Understanding the market
  – Product strategy
  – Business model
  – Technology innovation, Product capabilities
  – Sales execution

“VMware Strengths”:
  – Far-reaching virtualization strategy enabling cloud computing, new application architectures and broader management
  – Technology leadership and innovation
  – High customer satisfaction
  – Large installed base (especially Global 2000), and rapid growth of service providers planning to use VMware (vCloud)
VMWARE VIEW 4.5

Platform
- VMware vSphere for desktops

Management
- VMware View Manager
- VMware View Composer
- VMware ThinApp

User Experience
- PCoIP
- Print
- Multi-monitor display
- Multimedia
- USB redirection
Delivering The Best User Experience

Adaptive protocol for optimal user experience on LAN and WAN

End-to-end software solution with optional hardware

Addressing requirements from the task worker to power user
LOCAL MODE: MOBILITY & BRING YOUR OWN COMPUTER

View Client with Local Mode (Type 2 Hypervisor)

- Virtual desktop is checked-out to local endpoint and encrypted
- Access desktop, applications and data regardless of network availability
- Changes are checked in to the datacenter when online
- Extend IT security policies to local desktop
EXTENSIBILITY WITH LOCATION BASED PRINTING

- Leverage ThinPrint AutoConnect dll communicates over a virtual port with a ThinPrint .print Client
- .print client query locally connected printers and network printers
- Filter out certain network printers based on the location of the Client Host
- Integrated via GPO editor in .ADM directory
Optimized Cloud Infrastructure Platform

Scalability: Built for the largest desktop environments
- 1000s of VMs/pod
- Faster and more efficient vMotion leading to decreased migration time for VMs
- Shrink and grow desktops based on demand and priority
  › Dynamic Resource Allocation

Security
- Improve control with data secure in the datacenter
- Enable access to desktops with encrypted access from all endpoints

High Performance
- Optimized for desktop workloads
- Performance acceleration due to lower memory swapping

Best Density
- Increased desktop VM density – 16-20 VMs/core

High Availability and Business Continuity
UNIFIED SOLUTION FOR ALL USE CASES

Virtual Machines

PCoIP Protocol
Blade/Rack workstations

VMware View 4.5

Single Point of Control and Unified Management

- Remote Access
- Lab Users / Faculty Users / Remote Students
- High End Imaging /CAD
- True Multi Monitor
- SW to SW, HW to HW and HW to SW

DELL FX160 THIN CLIENT

DELL FX100 CLIENT

DELL LATITUDE TABLET

Global Marketing
FX100 - PCoIP true zero clients

**True zero-client eliminates desktop management**
Exceptionally secure, zero maintenance devices

- No Windows or Linux OS
  - No “second Tuesday” OS patches
  - No anti-virus, anti-spyware, ...
  - No device drivers
- Investment protection
  - Data center determines performance
  - No CPU, flash or memory limitations
  - Longer life cycle than Thin Clients
- No hard drive or fan
- Low power and heat
- Superior USB authorization
- Smart Card support starting Q1
- RDP and PCoIP protocol
Polling Question
ThinApp – application virtualization

Features
• Decouple applications and data from OS
• Agent-less architecture
• Wide platform and application support
• Plug into existing application management tools

Benefits
• Enable OS migrations and streamline application patch updates
• Enable application mobility and flexibility of access
• Minimize the number of desktop images managed
• Eliminate application conflicts
• Enable the use of multiple versions of applications
The VMware ThinApp Solution

**Agentless architecture**
- Single file – EXE, MSI
- No installation or changes to registry
- Zero management required on end point device

**Seamlessly fits into any environment**
- No streaming server hardware or software needed
- Plugs into any existing management framework

**Run Virtually Any Application from Any Device**
- Desktop, USB, flash, terminal services, Citrix
- Any windows application – simple to complex
- Supporting components can be run side by side (Java, .Net)

**Ensuring security without compromising user flexibility**
- User-Mode execution
- Virtual Registry/File System protects underlying host OS
- No pre-installed agent required on underlying OS
University of Toledo – View & ThinApp

Challenges
- Limited IT resources
- Difficult to secure information on local hard drives
- Time consuming application upgrades
- Limited availability for student lab time
- No remote access to applications or University resources

Solution
- VMware View with View Composer and ThinApp
- ThinApp on shared network drive
- Thin clients on campus
- Both LAN and WAN access

Results
- Over 2000 computers have access to over 30 virtual apps through ThinApp
- 500 virtual desktops
- Student labs now available 24 x 7 x 365 from any network connection
- Upgrades with Thin App take five minutes from single point
- Able to provision virtual desktop in under two minutes

“VMware View really extends the boundaries of the university out to our students wherever they are—students can access their hard drives, applications, and network resources even if they’re off campus.”

—Joshua Spencer, Desktop Development, University of Toledo
Thank You

Q&A