VMware Online Forum
2009

Leveraging VMware & HP
Solutions for IT Consolidation
and Cost Savings
Agenda

- The Problem
- Virtualization Solutions from HP and VMware
- Getting started
Virtualization can add to IT Pain Points

- Virtual machine sprawl
- More data
- New competition
- Aging infrastructure
- Complexity
- Budget cuts
- Increased demand
- Increased risk
- Energy costs
- Increased demand
Get more done with half the servers

2X memory, 2X storage and a 200% faster Smart Array

Freed-up data center space

144 GB RAM: 2x memory

36 TB: 2x(+) Storage

Xeon 5500

Smart Array
See the difference
ProLiant G6 gives you the best return for your budget

<table>
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<tbody>
<tr>
<td>Lower Operating Costs $18,000/yr</td>
<td>Featuring Intel Xeon 5500</td>
<td>Lower Operating Costs $3,850/yr</td>
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<tr>
<td>Power/Cooling Savings</td>
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<tr>
<td>Lower Software Costs $31,200/yr</td>
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<td>Lower Software Costs $8,800/yr</td>
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<td>OS licensing Savings</td>
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<tr>
<td>2005</td>
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<td>2007</td>
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<tr>
<td>42 servers (single-core) 10700 W</td>
<td></td>
<td>14 servers (dual-core) 2630 W</td>
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<td>Rapid Payback 3 month ROI from G4</td>
<td></td>
<td>Rapid Payback 12 month ROI from G5</td>
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*Source: Based on HP internal estimates*
11 New Platforms

A server for every need
HP ProLiant G6 and VMware

#1

- Top VMmark score!!!
- More VMware deployed on ProLiant than any other platform (per VMware & IDC)

HP added exclusives:
- VMware Infrastructure 3.5:
- Centrally manage thousands of virtual machines
- Quickly add new server resources
- Automate disaster recovery
- Leverage existing management tools

Maximize uptime, and improve energy & workforce efficiencies with HP ProLiant and VMware
Server virtualization creates new demands on storage

New demands on storage
- COST
- MANAGEMENT
- PERFORMANCE
- DATA PROTECTION & AVAILABILITY

Virtualized storage enables
- Higher capacity utilization
- Online configuration changes
- Scalable performance
- New methods and approaches

Virtualized storage unlocks the full potential of virtualized IT environments.
HP Storage for Virtual Infrastructures

Complete portfolio offering choice:
• iSCSI or Fibre-Channel connectivity
• SATA, SAS, SSD, tiered storage
• Affordable entry-level to high-end
• Scalable clustered storage
• High availability
• Data protection technologies
  • Snapshot
  • Remote replication
  • Network RAID
  • Multi-site SANs
• Capacity utilization technologies
  • Thin provisioning
  • Dynamic Capacity Management
  • Smartclone

vSphere 4 Certified and vStorage Ready!
HP storage features that improve vSphere environments

<table>
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<tr>
<th>Capability</th>
<th>Benefit for VMware Environments</th>
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<tbody>
<tr>
<td>Thin provisioning &amp; SmartClone</td>
<td>Reduces storage requirements and increases capacity utilization</td>
</tr>
<tr>
<td>Certified Storage Replication Adapters</td>
<td>Simple, automated disaster recovery solution with vCenter Site Recovery Manager</td>
</tr>
<tr>
<td>Native vSphere 4 multi-path support</td>
<td>No added software expense and complexity</td>
</tr>
<tr>
<td>Storage clustering and Vraid striping</td>
<td>Eliminates performance bottlenecks and scales performance with no application downtime</td>
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<tr>
<td>Dynamic LUN expansion</td>
<td>Scale virtual machines with no application downtime</td>
</tr>
<tr>
<td>Certified Virtual SAN Appliance Software</td>
<td>Cost-effective VMware HA &amp; FT to small environments</td>
</tr>
<tr>
<td>Network RAID</td>
<td>Solves no-single point of failure for VMware HA &amp; FT</td>
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</table>
Scale-out Clustered Storage

- Storage clustering eliminates bottlenecks and scales linearly
- Dynamically scale capacity and performance
- Reduces storage costs with built-in thin provisioning and SmartClone
- Network RAID – no single point-of-failure for VMware HA and FT
- Virtual SAN Appliance Software – only certified shared storage that virtualizes an ESX server’s internal disk resources
Total application availability – HP Network RAID

- Protect storage by isolating:
  - Racks
  - Room
  - Floor
  - Building
  - Site

- Keep data online during:
  - Facility disruption
  - Natural disaster
  - Site maintenance

- Storage volumes do NOT go away
  - Works with VMware HA
  - Works with VMware FT
Virtual datacenter in-a-box

- Leveraging HP LeftHand Virtual SAN Appliance (VSA) Software to converge blade servers and SANs
- HP LeftHand VSA + HP StorageWorks SB40c Storage Blade
- Highly available, clustered SAN storage in blade infrastructure
Client Virtualization & VDI from HP and VMware
HP VDI with VMware components
HP Thin Client—ideal access devices for VDI

- Enhanced security
- Easy manageability
- High reliability
- Environment-friendly
- Lower overall costs

Power consumption savings
✓ 20 watts versus 120 watts

Ideal for VMWare
- Certified by VMware
- VMware broker pre-installed
- Expedited new broker certification
- HP RDP Enhancements
### Essential
- **HP t5145**
  - HP ThinConnect
  - Access appliance
  - Simple, stateless
  - Limited Option

### Mainstream
- **HP t5545**
  - HP ThinPro
  - Adds:
    - Web browser
    - Terminal emulation
    - Media player
    - Limited Options

- **HP t5540**
  - Windows CE 6.0

### Flexible
- **HP t5630w**
  - Adds:
    - Ability to run more applications
    - Supports richer media experience
    - Most Options Supported

- **HP t5730w**
  - MSFT WES

- **HP t5735**
  - Debian Linux

### Specialty
- **HP gt7720**
  - MSFT WES

- **HP gt7725**
  - HP ThinPro GT

### Mobile, secure, reliable, thin client
- **HP 2533t**
  - XPe / WES

- **HP 4410t**
  - MSFT XPe

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### Flexibility and functionality
- **Task Oriented**
- **Basic Productivity**
- **Knowledge Worker**
- **Workstation Class**
Challenges of VDI - Today

- Multimedia Experience (web browsing / Streaming media)
- USB Experience (Disk on Keys / Blackberry Sync)
HP Client Virtualization Software Solutions

Portfolio

Solution Categories

Software Suite

HP Virtual Client Essentials

Protocols
• HP Remote Graphics Software

HP RDP Enhancements
• HP RDP Multimedia & USB Enhancements

Broker
• HP Session Allocation Manager

Streaming Client Software
• HP Image Manager

HP Client Management Solutions

Hardware
• HP System Insight Manager
• HP Device Manager

System Deployment
• HP Rapid Deployment Pack

Patch/Config
• HP Configuration Management
HP RDP enhancements

**Customer Type:** Currently running VMware View and Terminal Servers
- Need to leverage existing RDP environment
- Need better multimedia / Codecs are finite

**HP RDP enhancements**
- RDP enhancements adds another channel for media and USB
- End users can use USB devices locally
- Excellent out of box experience with RDP enhancements and multimedia software (codec) are *pre-installed* with most HP thin clients
- No additional cost to most HP customers
Remote Graphics Software

**Customer Type:** Currently running PCs or HP Blades

- Need robust graphic delivery
- Need for better multimedia supersedes need to leverage existing RDP environment
- Codecs possibly change over time

**RGS**

- Codec and protocol independent architecture
  - Automatically supports and accelerates all current and future codecs
  - Great for Flash animations and all video formats including Quicktime
- Graphics-intensive 2D and 3D applications
- Full multi-display support, including automatic resolution and display matching
- Multi-session cut, copy, paste support
- Full collaboration support
- Support for USB cameras and bi-directional audio devices – ie VoIP phones

User data – NAS / SAN
Client Virtualization Protocol Positioning

Desktop Experience

2D/3D Accel Graphics
Multi-media
# Displays
USB
2D Graphics

Data Entry Applications
Office Productivity Applications
Full Business Desktop Many Applications Full Internet
Performance Users Compute Intensive Big data, Multi-OS

Compute Performance / Work Complexity

RDP/ICA
HP RDP Extensions
RGS
HP Thin Client management
A solution for every need, from SMB to enterprise

Level of Automation

None

Low

Medium

High

Scale of Deployment / Environmental Complexity

ThinState

HP Device Manager

Altiris DS

HP CA (Standard)

HP CA (Enterprise)
It’s time to take the first step.

• Step 1: ROI White Paper
• Step 2: set up ROI assessment
• Step 3: Assessment and POC
HP and VMware web resources

HP VMware virtualization site:
www.hp.com/go/vmware
www.hp.com/go/virtualizetoday
www.hp.com/go/clientvirtualization

Get access to:
- HP VMware Active Answers site
- Certified servers listing
- Configuration sizing tool
- Industry-standard server OSs, VMware listing
- Best practices solution guides
Thank You