The V-Hive: A 2009 Update of Virtual Server Management Standards and Technology Providers

Cameron Haight
Virtualization is disrupting the operations management market by blurring the line between infrastructure and management, as well as creating downward pressure on pricing.
Key Issues

1. How does server virtualization affect system management infrastructures?

2. How are tools and standards evolving to provide potentially greater virtualization support?

3. What should IT organizations do to ensure adequate visibility and control within a virtual environment?
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<table>
<thead>
<tr>
<th>Dependencies</th>
<th>Heterogeneity</th>
<th>Mobility</th>
<th>Transitory Nature</th>
<th>Scale</th>
<th>Speed</th>
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</thead>
</table>

Have our management architectures become a house of cards?

Management Investment Obsolescence?
Non-Technical Affects of Virtualization

The shadow costs of virtualization

- Organization Updates
- Skill Enhancement
- Process Re-engineering
- Knowledge Retention
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Virtualization Management: Will Standards Finally Deliver?

Maybe, but fragmentation (and adoption) are potential issues …

DMTF: Virtualization Management Initiative (VMAN)

Open Virtualization Format
- VMDK
- VHD
- AMI?

EULA + Properties

WBEM Protocols
- WS Man, CIM XML

WBEM Infrastructure
- Events, Query, Operations

CIM Schema
- Models, Classes, Properties, Methods …
- Metaschema, Rules

SVPC (DMTF) Profiles
- DSP1059: Generic Device Resource Virtualization
- DSP1057: Virtual System
- DSP1043: Allocation Capabilities
- DSP1042: System Virtualization
- DSP1041: Res. Allocation

IBM Open OVF
- Goal: Prevent OVF Fragmentation
  - Common dev. lib.
  - X-hypervisor spt.
  - Enlightenment

Or

VMware vApp
- SLA Requirements
  - VMware Studio

Develop

Package

Distribute

Install

Run
The Management V-Hive: Gorillas Becoming Game Changers

*Key players are setting the market direction …*

![Word Cloud Diagram](image)

<table>
<thead>
<tr>
<th></th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>CAGR (%) 2008-2013</th>
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<tbody>
<tr>
<td>Administration Management</td>
<td>87.0</td>
<td>123.0</td>
<td>174.7</td>
<td>247.8</td>
<td>330.0</td>
<td>433.4</td>
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<td>Operations Management</td>
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<td>575.4</td>
<td>1,005.3</td>
<td>1,651.2</td>
<td>2,393.7</td>
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<tr>
<td>Embedded Management</td>
<td>684.5</td>
<td>866.9</td>
<td>1,125.3</td>
<td>1,326.3</td>
<td>1,556.2</td>
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<td>Total</td>
<td>913.9</td>
<td>1,300.4</td>
<td>1,875.4</td>
<td>2,579.4</td>
<td>3,537.4</td>
<td>4,577.8</td>
<td>38.0</td>
</tr>
</tbody>
</table>

*Note: There are many types of professional services offerings and strategic consulting services that are not included in the virtualization forecast. Gartner defines total software revenue as revenue generated from new licenses, updates, upgrades, subscriptions and hosting, technical support, and maintenance. Professional services, training and certification, and hardware revenue is not included in total software revenue.*

*Source: Gartner (January 2009)*

Server Virtualization Management Software Revenue, Worldwide, 2008-2013 ( Millions of Dollars)
VMware: Working to Remain Head of the Class With vSphere

Focusing on the future data center (and into the clouds) …
Microsoft: Getting Closer to VMware

Manages virtual and physical environments

Service-Level Management
- SCOM
- Financial Management
  - Quotas (VMM)

Configuration Management
- SCVMM
- SCCM
  - P2V/V2V
  - OVMST

Process/Run Book Automation
- PowerShell scripting
- WWF

Data Protection
- SCDPM
  - Orchestration
  - Chargeback
  - Storage mgmt.
  - Capacity planning

Service Management

Application Management
- SCOM Mgmt. Packs
- SCOM Proc Monitoring

Virtualization Operations Management (VOM)
- Library mgmt.
- Self-service
- Topology GUI
- Rapid prov.

Gaps:
- Orchestration
- Chargeback
- Storage mgmt.
- Capacity planning

Resource Optimization
- Resource Availability
  - Weights
  - Net optimization
- Resource Aggregation
  - Live migr.
  - Quick migration
  - Cluster integration
- Resource Optimization
  - PRO
  - PRO Tips
- DC Services

Legend: New products/features in red
Citrix: Staking Out a New Role

Refocusing on management

Legend: New products/features in red
The Big Four: Going for Their Share of Future Gold
Major Challengers that May Not Be Too Far Down the Road …

Potential virtualization management challengers …

- Cisco UCS Manager
- Sun xVM Ops Center
- Oracle Enterprise Manager/VM Manager
- EMC SMARTS/ControlCenter
- Virtual Iron

Gartner
Market includes "active" and passive technologies

"Monitors"
- **Network**: ExtraHop, Lancope, Network Instruments
- **Server/application** (BlueStripe, eG Innovations, Nimsoft, Sysload, SightLine Systems, uptime)
- **SAN/Storage** (Akorri, NetApp, TekTools, Virtual Instruments)
  - Understand implementation trade-offs (agent vs. agentless, network vs. system, console deployments)
  - Make sure solution accounts for virtual clock skew

"Controllers"
- Application delivery controllers (Cisco, Citrix, f5, Zeus)
- Virtualization management controllers (Radware, Quorum)

"Optimizers"
- VM-based (AppSense, Librato)
- FastScale
Making a Comeback: Capacity Planning

The planning paradigm is evolving to ITRP!

Traditional Players
- BMC
- Hyperformix
- Metron
- Neptuny
- OPNET
- PERFMAN
- SAS
- Systar
- TeamQuest

Virtual Newcomers
- 5nine
- CiRBA
- Lanamark
- Novell (PlateSpin)
- SolutionLabs
- VKernel
- VMware
Configuration Management: A Spectrum of Options

No one size fits all

Discovery

Dependency
- Relationship mapping
  - BlueStripe
  - BMC
  - EMC
  - HP
  - Tideway

Provisioning
- BMC
- Cisco
- Cohesive
- Data Synapse
- FastScale
- HP
- Novell
- Scalent
- Symantec

Patching
- Hypervisor
- Guest
  - BigFix
  - ESXEasyPatch
  - Shavlik

Config. Audit
- Change detection
- Reconciliation
- Remediation
  - ConfigureSoft
  - Ecora
  - Embotics
  - EMC
  - Fortisphere
  - ManageIQ
  - NetApp
  - NetWrix
  - Oracle (mValent)
  - Replicate Technologies
  - Solidcore
  - Tripwire
  - vmGalaxy
Orchestration: Using Coordination to Deal With Complexity and Control

But functionality is somewhat overlapping

Targeted at different markets, but will they compete or converge?
Chargeback: Growing Interest, but Modest Traction (for Now)

A "behavior modification" tool for VM sprawl

- Evident Software
- IBM/Tivoli
- Nicus
- SatoriTech
- Unisys
- VAlign Software
- VKernel

Some tools issues
- Limited costing guidance
- Some offer only blended rates — need to have different resource cost tiers
- "Service" aggregation is often manual
- Need to be able to track operations expenses

Usage reporting may be the logical intermediate step

Biggest impediment to adoption is usually cultural!
Traversing the Virtualization Maze: Root Cause Analysis

Advanced technologies will lead the way — someday!
Emerging Virtualization Management Suites

Real ambitions in the virtual world — but a "buffet" approach does not guarantee success

- Vizioncore (Quest)
- Veeam
- ToutVirtual
- VKernel

- Virtual environments
- Download models
- Community support

Integrated Appliances
ScienceLogic

Gartner
Freeware Offers Some Good Value, But Understand the Limitations

- Some are open source, others are not.
- They may represent scaled-down editions of commercial products or services with limitations on their use (i.e., number of servers).
- Additionally, there may be functional restrictions, such as limiting the amount of information that can be collected.

- There are beta versions of the products, and once they enter general availability, they may no longer be free.
- There are variations in terms of virtual platform provider support (such as VMware, Hyper-V and XenServer).
- Support, when available, may be charged for, even if the product is free.
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Compare Apples to Apples: Understand Management Technology Pricing Models

**A Pricing Model Sampler**

- By VM or instance
- By core
- By socket (or CPU)
- By server or virtual host (CPU count implied)
- Hybrids

**Diagram:**
- VM Density
  - Today: 12:1
  - Tomorrow: 30:1
  - Future: x:1
- Growing revenue gap

**Per instance (VM) pricing maximizes revenue, but most end users resist**

**Sub-capacity (vCPU<pCPU) pricing may be attractive, but most technology providers resist**

**Dynamic movement of resources adds to potential pricing complexity (licenses also often tied to specific servers)**
Look at Management Technologies From Both Angles

There is no single best method — know the trade-offs. But plan for combined management down the road!

Can my physical tools be extended to also manage my virtual environments?

Can my virtual tools integrate with my physical management technology?
Focus on the "Hard Things" First, Management Technology Last!

**Rationalize** the reasons for your virtualization investment: Include not only the benefits but also additional costs to establish credibility and to create the foundation for expansion.

**Institutionalize** the acceptance of virtual alternatives: Where possible, make virtual platforms the de facto standard via support agreements and chargeback methodologies.

**Operationalize** your virtual infrastructure: Develop extensions to current IT processes to support the changes that virtualization will require.

**Organize** your virtualization support staff: Develop roles and assign responsibilities, as well as establish communications channels across key stakeholders.

**Professionalize** your staff skills: Fund additional training, and make compensation commensurate with increased responsibilities (only if you want to retain them).

**Optimize** the infrastructure with management tooling: Although you should plan for management updates at design time, procurement of management technology should come only after the other steps have been completed.
Monday Morning
• Look before you leap. Assess the appropriateness of your management infrastructure and its ability to support your virtual server environment.
• Plan for continuing management market churn. Incorporate the added risk into your investment calculations, but leverage this chaos to your negotiating advantage.

The Next 12 Months
• Operationalize your management processes and then look to become more application-centric. Identify gaps in areas such as configuration management, change management and performance management, among others.
• Virtual server technology is the underpinning architecture for other virtualization options — for example, hosted virtual desktops — include this impact in your infrastructure and management technology planning.

On the Radar Screen
• Think in terms of the service (and perhaps the clouds). This means that you must plan to manage the virtual and physical together to deliver the necessary level of SLAs.