VMware on VMware: Private Cloud Case Study
Agenda

- VMware IT landscape
- Motivations for the Cloud
- Private Cloud Stack
- Impact of moving to the Cloud
Server Virtualization at VMware

Objectives
- Cost savings, improved uptime and business agility

Results
- VMware’s corporate IT servers are 98% virtualized
- 6300 VMs on 289 physical hosts (22:1 Consolidation)
- 4000 Server and 2300 View VM’s
- Server VM’s 2/3 Linux and 1/3 Windows
- 3,100 SF of datacenter space
- 3 Petabytes of storage
- No downtime for hardware maintenance, and virtual environments can be provisioned within minutes to support critical projects
- Managed by 9 Cloud Administrators

Business Impact
- Estimated saving of 50%+ over non-virtualized environment
Desktop Virtualization at VMware

Objectives
- Reduce overall cost of desktop support, improve customer service and improve security profile

Results
- Approximately 3000 staff using virtual desktop client today
- One full-time and three shared staff manage current environment
- Environment is scalable to 4000 users without adding incremental staff
- Speed troubleshooting capability and minimize impact on staff productivity
- Faster provisioning and extended h/w lifespan (server vs. desktop)

Business Impact
- 50% reduction in hardware costs ($1500 thick client vs. $650 thin client)
- 30% reduction in Help Desk support costs (centralized change management and control of desktop images)
Agenda

- VMware IT landscape
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- vCloud Stack and Application Profile
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End to End Business Application Provisioning Is A Complex Process

Best Case: 3 days
Worst Case: 8 weeks
End to End Business Application provisioning is 3X longer than VM provisioning
VMware is transforming its Enterprise IT to increase end to end business application agility by reducing provisioning time and cost of operations while improving security and control.
## CIO Goals For Hybrid Cloud

<table>
<thead>
<tr>
<th></th>
<th>Previously - Highly virtualized datacenter</th>
<th>Now - Hybrid cloud</th>
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</thead>
</table>
| End to end business application provisioning and scaling time | • 3 days to 8 weeks  
• Manual and complex | • - 90% time reduction  
• Highly repeatable and predictable |
| Cost of VMware IT (infrastructure and operations) | • 50% less than physical | • 20% less than virtualized |
| Security and compliance | • Rigid, manual – physical security products | • Flexible, agile purpose built for cloud |
| Business Application SLA | • Reactive multi-vendor non integrated solution | • Proactive integrated vCenter Operations solution monitoring application down to infrastructure |
| Networking | • Rigid, manual – physical networking products | • On-demand elastic networking built for the cloud |
Hybrid Cloud Journey

- **Self Service Cloud**: Rapid self-provisioning for low governance workloads
- **Business Production**: Achieve Unprecedented Reliability
- **IT Production**: Get the Most Out of Your Infrastructure
- **Production Cloud**: Securely and reliably extend for high governance workloads

Virtualization Expansion

Cloud Adoption
# Two Paradigms for Cloud Emerge

<table>
<thead>
<tr>
<th></th>
<th>Self-Service cloud for Pre-Prod (Low Governance” Cloud)</th>
<th>Production Cloud (“High Governance” Cloud )</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>The Amazon EC2 home turf</strong></td>
<td></td>
<td>Early enterprise customer cloud RFIs</td>
</tr>
<tr>
<td><strong>Users</strong></td>
<td>• App developers (otherwise bypassing IT infrastructure managers)</td>
<td>• IT infrastructure and operations staff</td>
</tr>
<tr>
<td></td>
<td>• Engineers and scientists procuring their own infrastructure</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Business owners procuring technology directly</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Training professional</td>
<td></td>
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<tr>
<td><strong>User characteristics</strong></td>
<td>• Limited budgets, short time frames</td>
<td>• Within the enterprise IT organization</td>
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<tr>
<td></td>
<td>• Willingness to go to public clouds to get the flexible resources and quick setup their internal IT organization can’t or won’t give them</td>
<td>• Looking to lower their costs for robust offerings that can handle their traditional enterprise workloads</td>
</tr>
<tr>
<td><strong>Types of Workloads</strong></td>
<td>• Development, training, demonstration</td>
<td>• Tier 1, 2 business apps</td>
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<tr>
<td></td>
<td>• Production use for internal (rather than customer) facing workloads (collaboration; portals; file servers; business intelligence; HPC)</td>
<td>• Tier 1-2 IT applications</td>
</tr>
<tr>
<td></td>
<td>• Web workloads</td>
<td></td>
</tr>
<tr>
<td><strong>Main Cloud Value Prop</strong></td>
<td>• “Give me a VM … fast!”</td>
<td>• Provisioning doesn’t happen often; but change happens fast and often</td>
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<tr>
<td></td>
<td>• Fast, self-service provisioning of new VMs</td>
<td>• Ability to continuously meet SLAs with little human intervention</td>
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<tr>
<td><strong>Required Technology Capabilities</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-service</td>
<td>• Self-service access without pre- deployment controls; no approvals</td>
<td>• Self-service access with structured and customizable approval processes</td>
</tr>
<tr>
<td>Integration</td>
<td>• IP Address management</td>
<td>• CMDB</td>
</tr>
<tr>
<td>Service Catalog</td>
<td>• Catalog content - Image templates</td>
<td>• Compliance logging and reporting</td>
</tr>
<tr>
<td>Primary competitors</td>
<td>• Amazon EC2</td>
<td>• Highly customizable service catalog</td>
</tr>
<tr>
<td></td>
<td>• vCenter Lab Manager</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Eucalyptus, Cloud.com, Nimbula</td>
<td>• DynamicOps</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• BMC, CA, HP, IBM</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Microsoft</td>
</tr>
</tbody>
</table>

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VMware IT successfully implemented Low Governance Clouds in 2010

Self Service Cloud

Rapid self-provisioning for low governance workloads

VMworld Labs and vSEL (Virtual Sales Enablement Cloud)

VMware R&D (vCloud Director Engineering)
Low Governance Impact Quantified
VMware IT is taking a phased approach to High Governance cloud

Phase 1
- 2 production applications running in a high governance cloud
- Batch mode integration for business critical applications
- Phase 1 completed (July 2011)

Phase 2
- 10 production applications
- Real time integrations for business critical applications
- SaaS secured by Horizon
- In progress

Phase 3
- Move to a hybrid cloud
- Cloud SP for burst capacity
- Real time mission critical and complex applications
- CMDB, IPAM integrations
- PaaS offerings (Cloud Foundry)

Evolve  Mature  Optimize
Phase 1 – Evolve The Virtualized Datacenter To Private Cloud

- Leverage virtualization to transform physical silos into elastic, virtual capacity
- Increase automation thru built-in policy-driven management
- Move from static, physical security to dynamic, embedded security
- Enable secure, self-service to pre-defined IT services, with pay-for-use

![Diagram of virtualized datacenter components: Compute, Storage, Network, Organization: Marketing (Users & Policies, Organization VDCs, Catalogs), Organization: Finance (Users & Policies, Organization VDCs, Catalogs), with data usage metered at $75.]
Phase 2 – Mature The Private Cloud

Private Cloud

Cloud Infrastructure

- Automation
- Management
- Compute
- Storage
- Networking
- Integrated Security

Organization: Marketing
Organization: Finance
Organization VDCs
Catalogs

Users & Policies

$75

Private Cloud
Cloud Infrastructure

Compute
Storage
Networking
Integrated Security

$75

vmware
Phase 3 – Optimize and evolve to the Hybrid Cloud

Cloud Computing Moves from a Technology Discussion to a Business Decision

- Common platform
- Common management
- Common security
Agenda

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- Motivations to move to a Cloud
- vCloud Stack and Application Profile
- Impact of moving to the Cloud
vCloud Components
Application Profile: SR Viewer/ Eforms

Business Critical app serving the Global Support organization with two major functionalities.

- **SR Viewer**: to provide deep visibility to the customer support requests like activity information (case history), attachments etc. in chronological view.
- **eForms**: It is an off-line tool that enables VMware to handle the SR creation and management for the CSR and TSE during Salesforce.com planned and unplanned outages.

- **Applications Stack:**
  - Application Server: Spring TC Server 2.0.0.RELEASE
  - Database: MySQL Database Server 5.1.51
  - Web Layer: Apache 1.2
  - OS: Linux
  - Monitoring: Spring Hyperic 4.5

- **Applications Stats:**
  - 200 concurrent users with almost 3000 internal users usage, with approx 5000 transactions/hr.
Application Profile: Business Intelligence (Marketing)

Business Critical BI App with a Data Mart serving the reporting and analytical needs for Marketing providing insight into Leads, Territories etc. across the Geos.

Applications Stack:
- Application Server: Oracle Business Intelligent Enterprise Edition 10.1.3.3.1 (OBIEE)
- Database: Oracle Database Enterprise Edition 10.2.0.4
- Web Layer: IIS
- OS: Windows 2003 SP2

Applications Stats:
- 60 concurrent users and 500 internal users, with approx 1500 transactions/day.
Live Demo
Agenda

- The VMware IT landscape
- Motivations to move to a Cloud
- Cloud Stack and Application Profile
  - Cloud Impact
## Cloud Impact: Current and Projected Refresh Cycles

<table>
<thead>
<tr>
<th>Application</th>
<th>Applications Stack</th>
<th>Current Refresh Cycles</th>
<th>Projected Refresh Cycles</th>
<th>Effort Estimates Before vs After</th>
<th>Impact</th>
</tr>
</thead>
</table>
| SR Viewer/ Eforms    | Application Server: Spring TC Server 2.0.0.RELEASE  
Database: MySQL  
Web Layer: Apache 1.2  
OS: Linux  
Monitoring: Spring Hyperic 4.5  | 1<sup>st</sup> Half 2011  
None  
(Note: Just got rolled out 3 months back)  | 2<sup>nd</sup> Half 2011  
2 refreshes X 5 instances (Dev, QA, UAT, LT, Stage) = 10 refreshes  |  
2<sup>nd</sup> Half 2011  
3 refreshes X 5 instances (Dev, QA, UAT, LT, Stage) = 15 refreshes  |  
Before:  
Best Case: 3 days  
Average: 2 weeks  
Worst Case: 3 weeks  
Effort: 5-8 Technical Resources from various Orgs like DBA, Sys Admin, Networking etc.  
After:  
Average: < 3 hrs  
Effort: one Cloud Administrator  |  
$60,000 per year  
cost reduction  
96% faster  
provisioning  
Improved productivity (8 FTE reduced to 1 FTE)  |
| BI Marketing         | Application Server: Oracle Business Intelligent Enterprise Edition 10.1.3.3.1 (OBIEE)  
Database: Oracle Database Enterprise Edition 10.2.0.4  
Web Layer: IIS  
OS: Windows 2003 SP2  | Year 2010  
5 refreshes X 2 instances (QA & UAT) = 10 refreshes  | 2<sup>nd</sup> Half 2011  
3 refreshes X 2 instances (QA & UAT) = 6 refreshes  |  
2<sup>nd</sup> Half 2011  
6 refreshes X 2 instances (QA & UAT) = 12 refreshes  |  
Before:  
Best Case: 2 days  
Average: 1 weeks  
Worst Case: 2 weeks  
Effort: 5-8 Technical Resources from various Orgs like DBA, Sys Admin, Networking etc.  
After:  
Average: < 4 hrs  
Effort: one Cloud Administrator  |  
$75,000 per year  
cost saving  
96% faster  
provisioning  
Improved productivity (8 FTE reduced to 1 FTE)  |
vCloud Positively Impact Business Application Provisioning

**Automated**
- Create and configure VM
- Configure networking
- Configure storage
- ...

**VM Provisioning**

**Wait time**
- Tickets and routing
- Approvals
- Queue time
- Priority
- ...

**Eliminated**

**Automated**
- Install OS
- Install agents
- Install and configure application
- ...

**Application provisioning**

*VMware*
Hybrid cloud is the most elastic and cost effective model

- Hybrid cloud offers lower IT spend through:
  - Virtualization and consolidation
  - Optimized workload sourcing
  - Optimized provisioning
  - Higher productivity in application development and maintenance

- This requires standardization of frameworks & infrastructure across public and private cloud:
  - Common platform
  - Common management
  - Common security

SOURCE: Gartner, IDC market data; Gartner IT Key Metrics Data 2009; EMC and VMware team analysis
SaaS, Private cloud and IaaS savings modeled only for x86 workloads (assumed 80% of spend)