Designing, Building and Deploying Hybrid and Private Clouds

James Robinson
Enterprise Solution Specialist

George Dobson
Partner Business Manager

Dell Enterprise Forum
Seminar Series

Optimise your enterprise
Australia and New Zealand 2014
Agenda

• Factors driving IT transformation to “cloud” architectures

• Dell’s Cloud Strategy & Cloud Portfolio

• Dell’s Active Infrastructure Portfolio & Active System Manager

• Dell & VMWare – Delivering Private Cloud platforms

• VMWare Strategy: The Software Defined Enterprise
Disruption to “IT as usual”...

BYOD, mobility & VDI
Smartphone users work an average of 240 more hours per year³

Data center traffic
25X more bandwidth (I/O) per rack needed by 2015¹

Virtualization
80% server virtualization by 2016⁴

Operating costs
In 2012, 68% of server-related spend was on management²

Cloud
85% organizations will use cloud tools moderately to extensively in the next 3 years
Challenges of traditional IT

Rolling out new IT services takes longer than expected

Just 29% of business users consider IT to be distributed, agile, & flexible

Source: InformationWeek survey of IT perception October 2012

Inefficient IT leads to difficulty supporting the business

28% Invest

24% Replace/Expand existing

48% Maintain

Source: Forrester Research, Inc., Forrsights Budgets & Priorities Tracker Survey April, 2013

Manual and often disconnected processes impact service quality

Up to 75% of downtime is caused by human error

Source: The causes & costs of data center system downtime – Advisory Board Q&A June 2011
Dell Cloud Strategy

Enabling private cloud

Converged solutions
Open source solutions
Cloud infrastructure
Advanced virtualization

Cloud clients

Delivering multi-cloud management

• Governance & access controls
• Performance monitoring
• Application integration
• Provisioning & management
• Cloud Broker

Supplying cloud builders

Cloud Management & Broker Engine

Public Cloud ecosystem
Software as a service
Community cloud (vertical compliance)
Managed private cloud
Off premises

On premises

Dell Cloud Consulting & Application Services
### A practical vision of Future-Ready IT

#### Key enablers
- Service oriented, template based infrastructure and workload automation
- Software-defined storage and networking
- Flexible next generation modular platforms

#### Key benefits
- Enable service-centric IT
- Bridge the gap efficiently between legacy apps and modern IT
- Increase business agility

#### Enabling Optimized IT

<table>
<thead>
<tr>
<th></th>
<th>Best-of-breed systems</th>
<th>System of systems</th>
<th>Fully integrated &amp; software-driven</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CapEx</strong></td>
<td>$</td>
<td>$ $</td>
<td>$</td>
</tr>
<tr>
<td><strong>OpEx</strong></td>
<td>$ $ $</td>
<td>$</td>
<td>$</td>
</tr>
</tbody>
</table>

Defined by software, accelerated by the **right** hardware
Dell Private Cloud Portfolio
Performance and Choice, at any Scale

Virtualization

Mainstream Enterprise Cloud Buyer

- Solve business challenges with proven tech
- Heavily invested in mainstream commercial tools, virtualization
- No time for piece parts, seeking turn-key single source solutions
- Focused on ROI, time to value, risk mitigation

Sophisticated Cloud Buyer

- Solve challenges w/advanced tech
- Open source savvy, DevOps savvy
- Sophisticated SW development talent
- Innovation labs, startups, hosters

Existing corp. workloads, critical business apps

- Dell Active System Manager
  - Advanced virtualization & datacenter automation
  - Foundational private cloud needs with mainstream hypervisors
  - Opportunity to lead with comprehensive Dell-on-Dell solution

VMware or MSFT Private Cloud

- Heavily invested in management tools from VMware or Microsoft
- Advanced private cloud needs
- Optionally, ASM for physical infrastructure automation or Dell Element Managers

Dell Red Hat OpenStack Cloud

- Reduce dependence on commercial offers
- RHEL shop extension
- On-ramp to OpenStack
- Enterprise Use Cases
- Certified everything
- Enterprise support

New, massive scale cloud apps, mid-tier LOB apps

Dell OpenStack Cloud Solutions

- Flexible, modular, open, hyper-scale
- Minimize dependence on commercial offers
- “Software defined everything” early adopter
- Dell Reference Architectures
- Dell Crowbar operations platform
Dell Active Infrastructure Portfolio

**IT Services**

| Integrated Infrastructure | Dell Servers | Dell Storage | Dell Networking |

**IT Services Ecosystem**

| Dell Software | Monitoring | Data Protection | Security | Billing | 3rd Party |

**Integration Platform**

| Workload Templates | Northbound APIs |

**Active System Manager**

| Infrastructure Templates | Resource Adaptors |

**Active Systems**

| Platform Reference Architectures |

| Virtualization |

| 3rd Party Servers | 3rd Party Storage | 3rd Party Networking |

**Active Solutions**

| Solution Reference Architectures |

| Private Cloud | Desktop Virtualization | Enterprise Applications |
Introducing Active System Manager 7.5

ASM 7.5 Enables more choice and accelerates convergence for a broader range of customers

**Simplicity and ease of use**
- Enhanced user interface provides an intuitive, end-to-end infrastructure and workload automation experience through a single console
- Streamlined deployment enabling faster time to value

**New modular architecture enables flexibility and extensibility**
- Broader 3rd party hardware support leveraging Dell IP and open source technologies
- Easily extend the product to meet the needs of specific environments

**Automation**
- Automation of key tasks & functions as defined by IT requirements and best practices
- Automated workload delivery and management of your converged infrastructure

---

**A Better Customer Experience**

**Agility**
Accelerate IT Service Deployment

**Efficiency**
Maximize IT Efficiency

**High Quality**
Strengthen IT Service Quality
<table>
<thead>
<tr>
<th>Offer</th>
<th>Overview</th>
<th>Description</th>
</tr>
</thead>
</table>
| **Cloud Transformation Services** | Lends technical expertise and cloud guidance for every step of your cloud adoption process | • Enhances cloud process and provides white glove oversight for Dell Cloud projects spanning public, private and hybrid opportunities  
• Provides cloud project management and complete end-to-end concierge service — from concept to implementation  
• Offers customized services to help customers wherever they are in their journey to the cloud |
| **Cloud Strategy Workshop** | Introduces cloud specifics and helps identify your individual cloud needs, laying the groundwork for cloud adoption | • Defines cloud and introduces cloud types and underlying technologies  
• Identifies pain points and links them to a specific need  
• Assists stakeholders in creating a common definition for cloud  
• Provides a pragmatic approach to infrastructure and workload candidacy for a cloud environment |
| **Cloud Readiness Assessment** | Provides you with an in-depth review of business, operational and IT objectives to determine your next steps in adopting cloud | • Captures requirements for migrating existing infrastructure and applications to the cloud  
• Documents appropriate solutions to orchestrate, operate and manage your cloud infrastructure  
• Gathers important information to help scope design projects |
| **Cloud Design & Implementation** | Translates assessment findings into public, private or multi-cloud deployment for implementation | • Designs a feature-rich solution with documented impact on major areas of enterprise architecture, business data, applications and technology |
| **Cloud Application Modernization** | Rationalizes the number of applications across your organization and determines which to migrate to the cloud | • Utilizes governance to ensure your organization’s application portfolio remains current  
• Transitions business-critical applications from legacy Unix or mainframe platforms to cloud infrastructure and open, standards-based platforms |
Dell & VMWare – Delivering private cloud platforms

Dell Cloud Consulting & Application Services

- Analytics & Capacity Management
- Self-Service Portal & Service Catalog
- Workflow Automation/Orchestration
- Hypervisor Management & VM Administration
- End-to-End Infrastructure Configuration
- Infrastructure Discovery & Inventory

VMware vCenter
- VMware vCO
- VMware vCAC
- VMware vCOps

Dell Active System Manager
or
Domain-specific element managers
VMware Strategy:
The Software-Defined Enterprise

• The Dell Partnership
• What have we built, and why

George Dobson
Partner Manager, Dell ANZ
VMware and Dell: A Strong Partnership

- Dell and VMware deliver efficient cloud infrastructure solutions that are fast to deploy and easy to manage.

- A strong history of working together to test, certify and improve solutions that blend VMware technology with Dell hardware, software and storage.

- Dell IT operates one of the largest production installations of vSphere in the world

- Dell were the first OEM to certify ESX1.0 on their servers, with many firsts since then.
VMware Delivers: The Foundation for the Software-Defined Enterprise

<table>
<thead>
<tr>
<th>End User Computing</th>
<th>Desktop</th>
<th>Mobile</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Virtual Workspace</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Applications</strong></td>
<td>Traditional</td>
<td>Modern</td>
</tr>
</tbody>
</table>

**Software-Defined Data Center**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Virtualized Infrastructure</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abstract &amp; Pool</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compute Abstraction = Server</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Virtualization</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Network Abstraction = Virtual</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Networking</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Storage Abstraction = Software-Defined Storage</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Physical Hardware**

<table>
<thead>
<tr>
<th>Compute</th>
<th>Network</th>
<th>Storage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical</td>
<td>Hardware</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CONFIDENTIAL
Notices & Disclaimers

Copyright © 2013 by Dell, Inc.

No part of this document may be reproduced or transmitted in any form without the written permission from Dell, Inc.

This document could include technical inaccuracies or typographical errors. Dell may make improvements or changes in the product(s) or program(s) described herein at any time without notice. Any statements regarding Dell’s future direction and intent are subject to change or withdrawal without notice, and represent goals and objectives only.

References in this document to Dell products, programs, or services does not imply that Dell intends to make such products, programs or services available in all countries in which Dell operates or does business. Any reference to an Dell Program Product in this document is not intended to state or imply that only that program product may be used. Any functionality equivalent program, that does not infringe Dell’s intellectual property rights, may be used.

The information provided in this document is distributed “AS IS” without any warranty, either expressed or implied. Dell EXPRESSLY DISCLAIMS any warranties of merchantability, fitness for a particular purpose OR INFRINGEMENT. Dell shall have no responsibility to update this information.

The provision of the information contained herein is not intended to, and does not, grant any right or license under any Dell patents or copyrights.

Dell, Inc.
300 Innovative Way
Nashua, NH 03063 USA