QUESTnet
Building a Cloud Architecture – Server/Storage Combined
Who am I?

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- Senior Systems Engineer, Nutanix (Booth #24)
- Blog: blog.rack.org.au
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- Podcasts: apacvirtual.com & vexpert.me/vCatchup

Experience
- 16 years in ICT
- Data Centre Focused (Compute/Storage/Network)
- Worked in Customer, Integrator and Vendor Spaces
- Lead Melbourne VMware User Group
Discussion Agenda
Building a Cloud Architecture

1. What’s holding back Enterprise IT from doing it?

1. How are Google/Yahoo/Facebook doing it?

2. What benefits do Nutanix bring to it?
What’s holding back Enterprise IT from doing it?
...is storage the real challenge?

<table>
<thead>
<tr>
<th>COST</th>
<th>COMPLEXITY</th>
<th>PERFORMANCE</th>
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<tbody>
<tr>
<td>“Storage accounts for up to 60% of the cost of my virtualization deployment.”</td>
<td>“Provisioning storage, deploying tiered storage solutions, and completing backups on time are all major challenges.”</td>
<td>“Maintaining high performance while scaling is a top 3 storage challenge.”</td>
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- VMware Customers at VMworld 2012
- Forrester Survey on Storage for Virtual Servers, Q4 2012
- Forrester Survey on Storage for Virtual Servers, Q4 2012
How are Google/Yahoo/Facebook doing it?
3 Key Components of Building a Cloud Architecture:

1. Commodity x86 Hardware

1. Direct Attached Storage

1. Software Defined Storage (Distributed File System).

“Abstract or separate underlying hardware from Software (Virtualisation anyone?).”
Nutanix Virtual Computing Platform
Compute/Storage Combined

**Compute**
- 4 commodity x86 compute nodes
- 8 Intel CPUs (up to 64 cores)
- Up to 1TB of RAM
- Dual 10Gbit & Dual 1Gbit Ethernet

**Storage**
- Direct attached storage
- 8 400GB SATA SSDs (2 per node)
- 16 1TB HDDs (4 per node)
- 4 software defined storage controllers

4 Nodes in 2U
Nutanix Distributed File System (NDFS) is a scalable distributed file system designed for virtualization workloads. Built for enterprise datacenters to enable a turnkey private cloud building block, NDFS delivers fault tolerance, high performance, scalability and reliability for server and desktop virtual machines.
What benefits do Nutanix bring to Building a Cloud Architecture?

1. Linear scale-out pay as you grow architecture
A converged platform in which compute and storage can be independently scaled via the use of CPU- and storage-heavy nodes in the same cluster.

Nutanix Virtual Computing Platform
Linear Scale-out with Pay-as-you-grow

VMs (VDI Desktops)

Number of Nodes (4 Nodes per Block)
What benefits do Nutanix bring to Building a Cloud Architecture?

1. Linear scale-out pay as you grow architecture

2. Improved Space and Power Efficiency
Nutanix Virtual Computing Platform
Improved Space and Power Efficiency

Traditional Architecture
- Servers + Storage + Network = 42U
- Power Consumption = 6,800W
- Max VDI users per 2U = 5

Nutanix Architecture
- 2 Complete Blocks + Network = 5U
- Power Consumption = 2000W
- Max VDI users per 2U = 400

Multiple Servers and Network Storage

Virtual Computing Platform

40% - 60% Cost Savings
What benefits do Nutanix bring to Building a Cloud Architecture?

1. Linear scale-out pay as you grow architecture

2. Improved Space and Power Efficiency

3. Architecture that’s Designed for Failure
Nutanix Virtual Computing Platform
Designed for Failure

Seamless HA

- Transparently route traffic to remote controller VM
- Pick and choose VMs that get HA
- Hypervisor continues to communicate with same datastore address
- Reroute to local controller VM once available.

Auto-Pathing

- No support from HW required
- Smart agent monitors controller VM
- Routing rules modified in vSwitch.

HA  High availability done right  Auto-pathing
What benefits do Nutanix bring to Building a Cloud Architecture?

1. Linear scale-out pay as you grow architecture
2. Improved Space and Power Efficiency
3. Architecture that’s Designed for Failure
4. Performance
• Data hits SSD first (configurable)
• Moved off to colder tier by Curator
• Brought back to hot tier depending on access patterns
What benefits do Nutanix bring to Building a Cloud Architecture?

1. Linear scale-out pay as you grow architecture
2. Improved Space and Power Efficiency
3. Architecture Designed for Failure
4. Performance
5. Reduced Maintenance.
Dynamic Cluster Expansion
Self-discovery with zero downtime

Flexible Clusters
- Add nodes in 2 clicks
- Expand cluster in minutes, not days or weeks

Self discovery
Automatically detects new nodes

Zero cluster downtime
Rolling Upgrades
Zero downtime

Upgrade SW
with
NO DOWNTIME

Service Continuity
Dynamically utilizes neighboring controller
Data remains available
No impact to end user

Simple.
Minimal administrative intervention
Even for large clusters
Thank You