



**The Private Cloud
It's Not As Daunting as They Think**

Abstract

This document is a response Jason Maxwell, General Manager of the Intel Server Platform Group, on the current climate surrounding the private cloud. Jason was quoted as saying: "*It's not easy, It's quite a daunting task*". The truth of the matter is that it is easier than he suggests. In fact, when properly conceived, The private cloud is a turn-key solution.

Article:

<http://www.informationweek.com/news/services/saas/showArticle.jhtml?articleID=221500038>

Introduction

The blogs and forums were brimming with activity when Jason Maxwell, GM of the Intel Server Platform Group, made a claim concerning the relevance of the private cloud in the enterprise. Jason claims, "*It's not easy, It's quite a daunting task.*" Charles Babcock for Information Weekly backed up this claim by stating comparing the efforts of Microsoft, Amazon and Yahoo. Mr. Babcock says, "*There's no blueprint to consult or cloud building packages to purchase. Other private cloud builders are going to have to make the investment as well.*" It would certainly be arrogant to assume that Microsoft, Amazon and Yahoo haven't done great things when creating their clouds, but their ideas aren't entirely new. Virtualization, automation and grid-computing have been around for a long time. The mystique of the cloud falls just short of magic. Cloud computing is attainable by anyone.

As a pioneer in establishing cloud computing as a simple repeatable model, Hexagrid Computing empowers enterprises and data centers by providing the tools and design that can rapidly and inexpensively create the cloud. By taking best practices coupled with state-of-the-art management software, Hexagrid is in-fact creating a "*blueprint*" for establishing the private cloud as a turn-key solution that can be implemented immediately at an extremely low-cost.

The Private Cloud

According to Jason Maxwell, the private cloud refers to a cloud that is created within the boundaries of an enterprise to satisfy the demand of its internal customers. Jason Maxwell, as quoted in Charles Babcock's article, states the following:

"Intel has heavily virtualized its servers in two areas: in the data center consolidation of legacy applications and in its shared electronic design automation tools. Both sets of virtualized servers are candidates to become different types of internal clouds, he said."

Hexagrid believes that a properly architected cloud can be used for both public and private consumption. There is no divergence between the public and private model if properly implemented. Hexagrid believes that Cloud Computing is:

Best Practices in Hardware Implementation
Best Practices in Virtualization
Best Practices in Automation
Best Practices in Service Delivery
Best Practices in Self-Service Provisioning

Hexagrid is the first true partner-centric organization that empowers enterprises and data center facility providers to rapidly deploy Cloud Computing as a SIMPLE AND REPEATABLE HIGH-MARGIN REVENUE MODEL. The product that establishes the foundation for this partnership is VxDatacenter.

The Hexagrid Value Proposition

It is Hexagrid's belief that the best partnerships are built when each party is free to focus on what they do best. Having said that, Hexagrid partners provide their traditional IT infrastructure:

- Bandwidth
- Power and Cooling
- Floorspace
- Hardware

Hexagrid empowers this infrastructure by providing:

- Best in breed cloud management software
- Business and technical consulting
- Co-branding and channel management services
- 24/7 platform support
- The 'BLUEPRINT' for the cloud

Hexagrid helps the facility establish the revenue model and the facility keeps the lions share of revenue. Hexagrid gets paid only when the partner is drawing revenue.

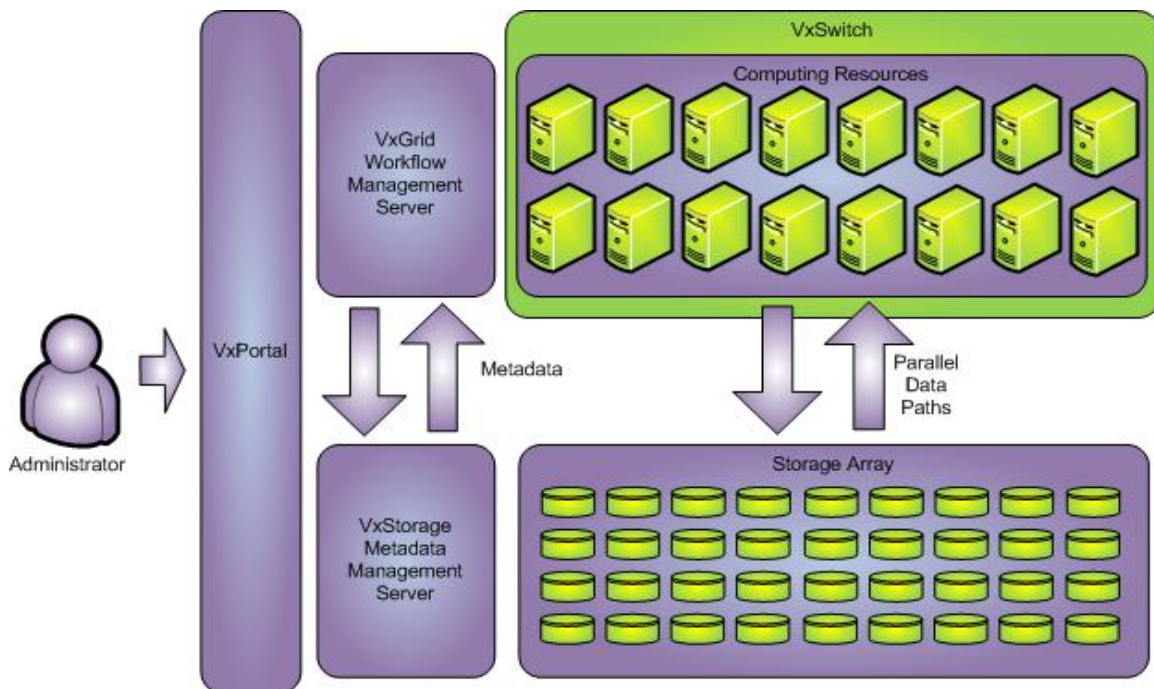
VxDatacenter – Your Cloud, Simple, Complete

In short, Charles Babcock was premature to exclaim that there is no 'Blueprint' or 'Cloud Packages' to install. VxDatacenter is that blueprint. VxDatacenter is the cloud package. Hexagrid understands that the cloud isn't about VMWare or EMC cabinets. It's about customers running their virtual appliances cost-effectively and on demand. If cost is the core driving force (it's always the core driving force), then why would one start building the cloud by purchasing the most expensive hypervisor? To make matters worse, the hypervisor is just one piece of the puzzle. To get to IaaS, you have to start bolting on technologies to handle the network fabric, the storage virtualization and the customer interfaces. It's one thing to pay for all of this software. Paying for the engineers required to integrate this solution is prohibitive.

Hexagrid's VxDatacenter combines best-practices and best-of-breed management software to create a blueprint to implement a multi-tenant private cloud. Hexagrid understands that the cloud is more than the sum of its parts. The cloud is a seamless integration that has dependencies at every level of the infrastructure stack. Successful models are simple, not complex. VxDatacenter was built on the principle that customers want clouds, not more software. Hexagrid simplifies Cloud Computing by understanding the complexities and providing a turn-key solution that is ready to go out-of-the-box.

Hexagrid believes that the cloud should have the following characteristics:

- Hypervisor should be zero or low-cost
- It should run on the lowest cost commodity hardware
- The compute nodes should be diskless
- It should be vendor agnostic to virtualization technologies
- It should have open architecture for integration
- It understands complex business relationships
- Adding physical resources to the cloud is plug-and-play
- Storage integration is key, not a value-add to the cloud
- The cloud should have less software, not more



Hexagrid's VxDatacenter High Level Architecture

The Hypervisor should be Zero Cost – If the goal of low-cost computing is low-cost, why buy an expensive proprietary hypervisor? The real point is that end users don't care what hypervisor is running, they just care that their Windows 2008 server is running. If the hypervisor isn't adding any value, why pay for it? Hexagrid invests heavily in Linux (KVM) as the hypervisor of choice. Why?

- Linux has proven to be the most scalable operating systems (Runs nearly all super-computing clusters in the world)
- It is low-cost.....no-cost
- Hexagrid has 100% visibility into the inner workings of KVM and can build it to suit the demands of the cloud
- Just as it can be scaled to great sizes, it can also be diminutive
- It runs everywhere

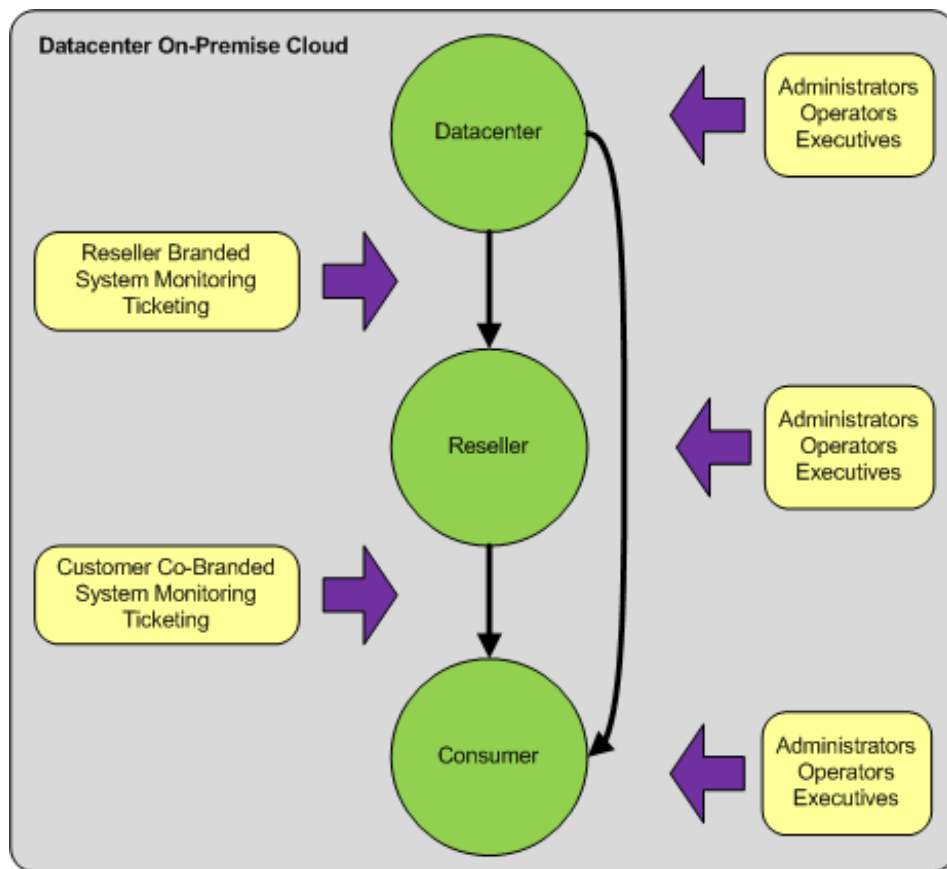
Its About Low Cost Commodity Hardware – The customers want low cost IaaS. You can build it with expensive hardware, but why do that when you don't have to? Commodity hardware means cheap storage too. The cloud should leverage the lowest cost commodity hardware provider. By 'low-cost commodity hardware', we are referring to ALL hardware providers.

The Cloud is Diskless – Borrowing lessons learned from grid computing, if you want truly portable workloads, you have to stop pushing your OS images through the network. Put ALL of the storage where it will be managed best. Let the cloud manage the mapping of the storage to the virtual machines.

The Cloud is Vendor Agnostic – Customers shouldn't care what hypervisor is running their Windows 2008 machine, even when they move it. The cloud should be able to run alternative VM images as well as export images for other cloud environments.

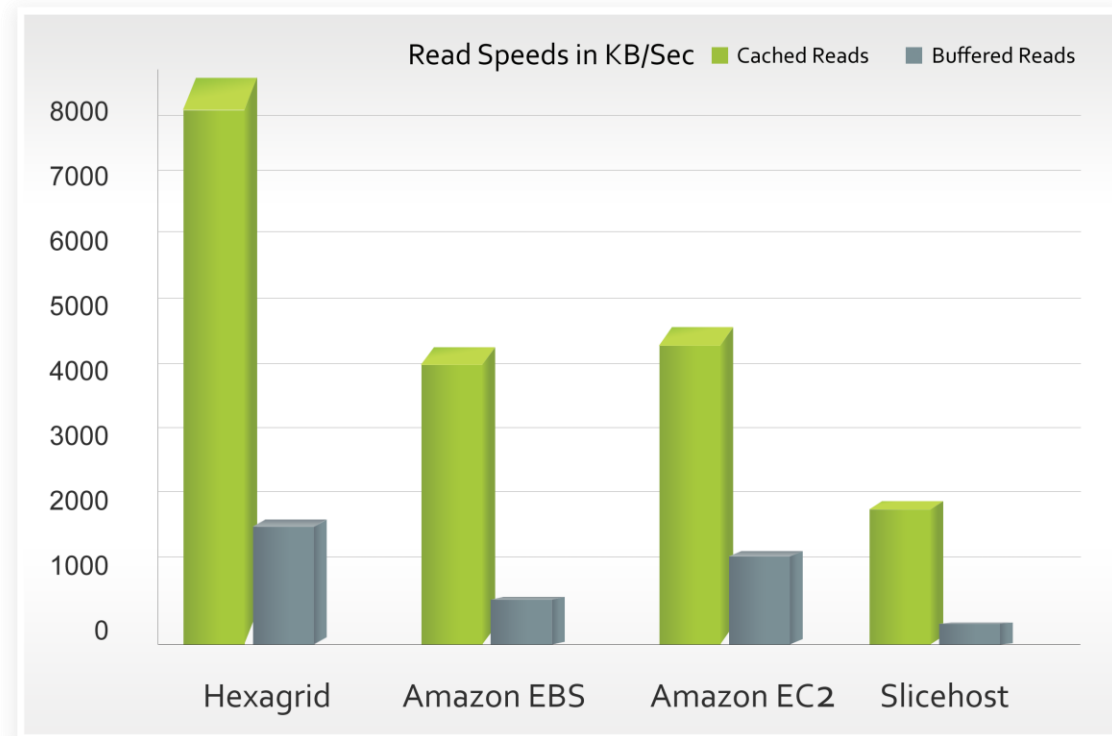
The Cloud is Open – Business specific tools or reseller co-branded portals should have an easy to integrate web service layer available. The purpose of the cloud is to enable business, not to dictate how it should be done.

The Cloud-Scape is Complex - Enterprise datacenter relationships are complicated. Datacenters host resellers and business groups that in turn pass resources to MSPs and departments. The cloud must understand the consumption of resources as well as delivery. Whether public or private, the cloud must be able to provision resources through multi-level channels while maintaining top-down security and policies, and managing how these services are charged-back through the channel. When this occurs, the cloud becomes a true value chain that businesses can build around.



Adding Capacity Should be Plug and Play – The goal of cloud computing is to reduce costs for everyone, including the datacenter provider. By automating the thin provisioning of new hardware, skilled resources can spend their time adding value to the infrastructure, not building it.

Integrated Cloud Storage Makes Sense – It just doesn't make sense to manage your virtual machines by pushing system images through the network. Furthermore, customers need the freedom to order resources in sizes other than small, medium and large. Fully featured high-performance storage is thin provisioned on commodity hardware. By high-performance we mean significantly faster than the disk I/O of leading providers like Amazon and Rackspace.



Is More Software Really the Answer - Hexagrid says NO! Again, it's all about low cost computing. How can low-cost computing be achieved with hypervisor specialists coordinating with cloud network specialists that are trying to squeeze every bit of performance from the cloud storage specialists?

Conclusion

"It's not easy, It's quite a daunting task", is what the industry believed up until now. In all fairness, Cloud Computing *is* complex. Like all things complex, pioneers blaze new trails to tame the wild territories. Hexagrid is that pioneer. By understanding the core challenges to the data center and executing a precise solution to address these challenges, Hexagrid is empowering the next generation of data center infrastructure.

Hexagrid believes that the cloud is not only low-cost, it is attainable by anyone. Hexagrid partners benefit from not only best of breed IaaS technology, but complete channel management through a complete revenue model. By providing business support as well as technology support, data centers can launch into a transformational strategy immediately.

It's not as daunting as they think.