Cloud Computing and the ParaScale Platform:

An Inside View to Cloud Storage Adoption

CARPATHIA HOSTING, INC.

parascale
Powering Cloud Storage

Cloud computing and cloud storage solutions are beginning to emerge in the market. As such, many users are struggling to understand how these technologies compare with existing options. The hype around everything 'cloud' has hit an all time high and these inflated expectations need a dose of reality. The hype is compounded by a lack of real world examples, or use cases, to serve as references. As a result, Service Providers and the enterprises that are considering cloud services don't understand where to begin or even if the 'cloud' adds value. Several key questions typically arise.

- What real-world challenges are being solved by leveraging a cloud infrastructure? How are Service Providers offering to host their customer's business applications in the cloud? How do consumers separate hype from reality?
- How do I go about building a cloud infrastructure and seamlessly integrate compute with storage? Once the infrastructure has been setup and my services start to grow, how do I position myself to handle massive growth? Can I perform all this with minimal upfront capital expenditure?
- How do I differentiate my services from other offerings in the market? How can I build a cloud infrastructure that can be used to offer differentiated services?

In this paper, we attempt to separate the hype from reality by offering a real-world example of a Hosting Provider that is generating revenue by offering cloud services. We discuss, in detail, how Carpathia Hosting has deployed the ParaScale platform to build a scalable cloud solution while offering differentiated services.

Carpathia Hosting, InstantOn™ with Parascale

Carpathia Hosting is a leading provider of enterprise managed hosting services supporting a worldwide customer base including government agencies, large enterprises and small-to-medium businesses in nine datacenters across the United States and Canada. Carpathia Hosting delivers a portfolio of services to these customers including colocation, managed services and cloud-based solutions. Carpathia recently launched, a unique service that unlocks the true potential of cloud computing. It is comprised of two components – Carpathia AlwaysOn™, using Carpathia Managed services, and Carpathia InstantOn™, utilizing Carpathia's cloud computing platform, offering seamless integration of cloud and dedicated resources. They are successfully deploying the ParaScale platform within the backend infrastructure which helps to enable instant access to compute and storage. Carpathia Hosting calls this unique approach Carpathia Cloud Orchestration™.

Carpathia Hosting has deployed the ParaScale platform in a tightly coupled storage and compute infrastructure. The platform aggregates storage from heterogeneous servers to form a massively scalable storage pool that can be viewed, accessed and managed from a single point. However, it is more than just a tier of storage. It is a platform on which applications can be instantiated and run from. These applications can be anything from simple transcoding and indexing algorithms, antivirus and malware protection, to compute instances. Applications running directly on the same operating system and hardware as ParaScale, help to eliminate network bottlenecks. These applications can interface seamlessly with storage using the ParaScale global namespace, making it tightly coupled and reliable. Using ParaScale, Carpathia Hosting has deployed an elegant distributed platform that can scale linearly for applications and storage.

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For example, a customer required a dedicated cloud that can process high volumes of data over a low latency network. When new content is written to the storage cloud, the Cloud Orchestration™ infrastructure spins up a compute instance, processes the data directly, and writes it back to the cloud. By running as a tightly integrated solution, the system is able to achieve extremely low latency between the processing of the data and the storage. Another advantage is the ability of the infrastructure to scale linearly as required. When additional content arrives, the system can automatically spin up parallel compute instances, all of which have low latency access to the data. Using cloud bursting, the platform can add more compute instances to process extremely large data sets dynamically. Such a system meets the performance and scalability requirements of the customer and truly differentiates Carpathia Hosting's offering from other providers. Today, Carpathia is delivering more than 20 petabytes of cloud storage to customer in both private and multi-tenant solutions.

Why was ParaScale selected

Carpathia Hosting evaluated many storage solutions including SAN, NAS and cloud before selecting ParaScale as part of the InstantOn™ platform. The key selection criteria included:

- Ability to use commodity hardware to create multi-petabyte storage solutions both as private cloud storage dedicated to a single customers or multi-tenant solutions
- Deploying using a standard Linux-based distribution to allow local extension of services beyond simple storage
- Standard protocols to deliver the value of cloud storage without the need for customers to recode applications or manually move files using web interfaces
- The ability to build solutions beyond basic storage services for their customers with ParaScale providing a common storage bus for InstantOn™

While many solutions evaluated offered good API's and features focused at the web development community. Carpathia Hosting found the ParaScale feature set aligned very well with the needs of enterprise and federal customer wanting to take advantage of the pay-per-use cloud storage without the integration headaches of other cloud-based solutions.

Advantages of the ParaScale Platform

The ParaScale software aggregates storage from heterogeneous servers to form a massively scalable storage pool that can be viewed, accessed and managed from a single point. The software runs in user space on commodity hardware running standard Linux, and binds them together to form a loosely- coupled pool of storage. The Platform supports a global namespace and each node has access to the entire namespace within the cloud. Tightly coupling the applications and storage infrastructure into an integrated platform provides several advantages.

Consolidated Hardware

The Platform eliminates the need to install and maintain separate hardware. Service Providers just need to setup one cloud storage infrastructure that runs ParaScale Cloud Storage software and the application instances. The entire networking infrastructure between the application compute servers and the storage is no longer needed, thereby eliminating traditional networking problems. This minimizes management overhead for system administrators and enables organizations to significantly reduce operating expenses.

Improved performance

By integrating applications and storage, the ParaScale Platform does not restrict the flow of data. It allows users to scale out and grow their platform in capacity and performance, removing network bottlenecks. Customers can be assured that performance requirements will not affect scalability and scalability will not impact performance. As the application needs more compute or storage, the user can simply add resources to the single ParaScale Platform.

Easy to grow and manage

Users can start small and grow seamlessly to petabyte scale by adding resources as required. Users can provision additional storage and compute into the cloud with a few mouse clicks. This is an online operation and does not affect data access. The cloud detects the additional storage and pre-empts the migration of data to the added resource for capacity balancing. Similarly, retiring resources from the cloud is a simple, online operation and does not affect data access. Automated integration and migration features within the ParaScale Platform makes it as easy to manage a cloud with several hundred nodes, as it is to manage one with five.

Create Differentiation

As Service Providers begin to think about offering cloud service, the need to differentiate their services from their competitors will become critical. Cloud services will inevitably become prevalent, but differentiation will be the unique source of competitive advantage. If everyone offers that same service, the only option is to cut prices making it a quick race to the bottom. The ParaScale Platform offers Service Providers truly unlimited ways to differentiate their services by giving them the ability to run complete application instances on the Platform itself, and have it process data directly from the cloud. There are a plethora of Linux applications which solve unique customer challenges and are an interoperability test away from ParaScale cloud certification. Service Providers can create customizable services by understanding every customer's unique needs and tailoring a service specifically for them. Providers can charge higher fees by moving customers up the stack to greater value added services, and use that as a springboard to differentiate their service from competitors.

Conclusion

Service Providers striving to offer cloud services to their customers need to sort out the hype and understand the strengths and weaknesses of different solutions. One such leading Service Provider is Carpathia Hosting. Using ParaScale, they have tightly integrated computing and storage to provide a clean and elegant cloud infrastructure that significantly improves manageability and performance. This solution called Cloud Orchestration allows Carpathia to differentiate itself amongst other service providers.

ParaScale is designed for Service Providers and offers a host of options to offer cloud services and generate recurring revenues. We invite you to register at the ParaScale website and download the free four TB version of the software. If you would like additional information, please e-mail ParaScale at ps_sales@parascale.com

If you'd like more information about Carpathia Hosting's hosting and managed cloud services, please visit www.whatisinstanton.com or send an email to sales@carpathiahost.com.

CARPATHIA HOSTING, INC.

Carpathia Hosting, is a leading provider of enterprise managed hosting services for government agencies and businesses that require Colocation, Managed Services, Data Center Management, and Cloud Computing. Employing dynamic technologies that remove hardware dependencies and improve efficiencies, Carpathia Hosting solutions strive to reduce operational costs while surpassing SLA requirements. As a datacenter neutral company, Carpathia Hosting is quickly becoming the hosting company of choice for companies that demand security, quality and high performance.

43480 Yukon Drive, Suite 200 Ashburn, Virginia 20147
Voice: 1.703.740.1730 Toll Free: 1.888.200.9494 Fax: 1.703.997.5577

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ParaScale ("Parallel Scalability") was founded in 2004 on the premise that advances in computer hardware over the past ten years make possible better solutions for file storage, management, and distribution. Better means solutions that are more reliable, with more storage capacity, with higher read/write bandwidth, easier-to-manage, and less expensive to buy and operate than ever before. ParaScale recognized the need for a new class of storage solutions designed to support the wave of digital-content-intensive applications being adopted in the 21st century

10450 Bubb Road Cupertino, California 95014
Voice: 1.408-217-6738 Fax :1.408-716-7011