Panther Express: High Capacity, Low Cost Storage Delivers For Emerging CDN Market

Companies around the world are continuing to expand their businesses online but face inherent physical constraints and limitations stemming from the geography of data as it is distributed across the globe. With widespread adoption of online video and other rich media content, delivering this content reliably, quickly and making it accessible is challenging. To have the most cost effective network and deliver near real time access to data means deploying architecture with highly available, redundant storage at a very low cost. Panther Express, an innovative company that is leading the charge to commoditize the Content Delivery Network (CDN) industry, is making content delivery more affordable for companies doing business on the Internet. Panther Express currently operates data cache locations around the world

Challenging an industry that is facing ever-increasing data demands, Panther Express not only offers their customers an aggressively-priced content delivery network (CDN) that ensures rapid and reliable content loading and superior performance, but does so by taking advantage of low cost EtherDrive® storage from Coraid, Inc.

Panther Express uses Linux throughout their operation and routinely adopts the latest technological advances in both hardware and software. So it is not surprising that the company turned to AoE storage innovator Coraid for their EtherDrive storage used in their shielding layer cache storage. Using EtherDrive storage, Panther Express solved throughput issues and supported their growth by incrementally adding storage capacity as they needed it. The ease by which Coraid's EtherDrive appliances allow additional storage to be added was extremely important, considering their projected five fold growth over the next year alone.

Business Need

The data explosion has just begun, According to research firm IDC, 161 exabytes of information were created by individuals and businesses in 2006. The USAToday estimated that is According to the USA Today that is 168 million terabytes, or roughly the equivalent of 36 billion digital movies, 43 trillion digital songs or 1 million digital copies of every book in the Library of Congress.[1] To meet online audience demand Content Delivery Network Providers are using state of the art technology to immediately deliver data to customers as they need it. Leading CDN provider Panther Express' initial installation used Coraid EtherDrive storage to host 6.5 TB on 2 Coraid EtherDrive appliances, providing customers with near real-time responses to data requests.

To meet its customer's demands, Panther Express needed to implement a reliable and robust technology infrastructure to support data availability 24x7. And it had to do so at the lowest cost possible. Coraid's EtherDrive storage matched their requirements perfectly.

Business need: Panther Express was looking to provide the most cost effective content delivery network (CDN) for global customers. The company's storage requirements included rock solid reliability, redundancy, high performance, 24x7 availability, and simplified management. The product also had to integrate easily into Panther Express' Linux environment.

Solution: Panther Express selected Coraid's EtherDrive storage appliances for its critical shielding layer cache storage. EtherDrive SR1520 Storage Appliances were installed at several locations in the Panther Express network to deliver layer two (shielding layer) cached content to its edge cache servers. Using EtherDrive storage, Panther Express can afford to maintain multiple redundant caches of data. When content is accessed requests come into Panther Express' CDN, if the data is not immediately available in the edge cache server, the request is served by the shielding layer cache storage. Only first time access to content is routed to the actual content owner's location. Subsequent content access attempts are service quickly and efficiently by the Panther Express CDN. By creating redundancy the Panther Express CDN delivers faster page loading, translating that immediacy into more revenue for the content owner.

Benefits: Panther Express estimates that the cost of Coraid AoE-based storage is about 30% less than all other storage options they explored. Because AoE is native in the Linux kernel, the company quickly and easily integrated the technology and Coraid storage into their Linux environment. They can now incrementally add storage to their infrastructure as needed, without incurring costly migration time or costs associated with using proprietary technology.

Panther Express is a privately owned company that offers Internet providers a fast and reliable content delivery network, delivering services to many of the world's largest organizations and companies.

<?> USA Today, Michelle Kessler, "Days of officially drowning in data almost here." March 2007.

Key Challenges

Data located thousands of kilometers away has high latency in being delivered due to the physical limitations of the global broadband network that comprise the Internet. To deal with this inherent latency and meet customers' data demands for immediate content access, Panther Express relies on a tiered caching storage architecture that delivers redundancy and low latency. But, redundant data storage usually means significant additional costs.

Using Fedora-based Linux servers, Panther Express created a system that uses 100% open source software throughout the company infrastructure. They have not paid for any of the software in their CDN. To keep the system lean, Panther Express opted to use storage technology based on the AoE storage protocol—a technique for transporting ATA disk commands over standard Ethernet networking developed by Coraid. This approach makes it easier to consolidate file servers and networked storage onto a single platform.

By using Coraid's storage, Panther Express has the ability to scale data storage incrementally as they need it, at a cost significantly less than other network storage options like iSCSI or Fibre Channel. Panther Express continues to turn to Coraid for storage as their needs grow. They estimate their storage costs using EtherDrive storage is well under $1 per Gigabyte.

"Once Coraid's EtherDrive SR1520 was running on our own systems we realized it was definitely the right choice.... Before moving to Coraid's AoE storage, 50% - 70% of our time was spent getting servers up and running, and administrating the storage – all at a significantly higher cost per physical server. Now, we can process many TB per day with a greater success rate – a significant improvement over our old system," said Anthony Katsur, COO.

Solution: Coraid EtherDrive Storage accessed by Linux servers

The Panther Express CDN is designed in a tiered cache storage architecture. The company developed key caching algorithms that make the technology work efficiently for their customer demands.

Panther Express utilizes edge servers strategically located at points-of-presence (POPS) around the world and are connected to high speed broadband links to a shielding layer of cache storage. The edge servers immediately provide low latency content for their geographic service region. By using the shield cache layer to isolate the owner content from the edge servers, shielding cache speeds the edge server performance when new content is needed and off-loads traffic from the content owner's own website.

Coraid's EtherDrive storage is used in Panther Express's innovative architecture as the key scalable component of storage for all of the shielding layer locations. As the Panther Express customer base grows, the company can quickly scale the shield layers of storage by adding more disks to the EtherDrive storage appliances, enabling the company to invest incrementally in storage as their business grows.

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> **- Anthony Katsur, COO, Panther Express**

Results

Panther Express expects that their system architecture will help keep storage costs low and ensure data uptime is at 100%. Deploying EtherDrive storage allows Panther Express to further their mission of cost effectively providing content through an architecture that is based on simple operating principals and open standards.

"Delivering data with top-tier performance and lowest-in-market costs is our key goal. We allow companies who rely on the Internet to focus on growing their businesses instead of infrastructure and technology costs," said Mark D. Pesonen, Panther Express CEO. "We bring over ten years of Internet delivery best practices to a CDN, with an architecture that relies on reliable and cost effective technologies. EtherDrive storage helps us deliver on our mission."

Storage Type:	Layered Cache Disk Storage for Streaming Media and other large data files
Operating System:	Linux Fedora Core 5
Application software:	Panther Express-developed caching servers, open source software
Coraid products used:	SR1520
RAID configuration:	JBOD
Disk Size:	500GB
Cost Savings:	More than 30% saving over iSCSI or NAS solutions
Key Decision Factors:	Cost, Scalability, Reliability, Flexibility