PolyServe™ A company of hp

Case Study

The Challenge

- Improve user response times
- Support 1,000 user deployment
- Meet 24/7 Service Level Agreement
- Simplify the administration of server, storage and clustering infrastructure
- Provide a scalable on-demand file services platform for growth within a Citrix server farm
- Keep costs to a minimum

The Solution

- PolyServe Matrix Server™ for Windows
- Two-node cluster of 3.4 GHz dual-processor Intel® Xeon® HP ProLiant DL380 servers
- Microsoft Windows 2000
- HP StorageWorks Modular Smart Array 1000
- 60 Citrix MetaFrame servers

Results

- Improved performance by 300% at peak
- Simplified administration by managing servers and storage from a central control point
- Achieved central backup of all corporate data
- Delivered processing and storage capacity on demand
- Dramatically lowered Total Cost of Ownership
- Provided fault-tolerant file services

Petroleum Heat & Power Slashes Costs and Simplifies Windows File Serving Environment with PolyServe

The Petroleum Heat & Power Co., Inc. (Petro) is the largest division under its parent company, Star Gas Partners, L.P. Petro also happens to be the largest heating oil company in America. Touting more than 100 years' experience, Petro has attained its leadership position through its steadfast commitment to superior customer service. For the company, it has meant making large investments in information technology to support a breadth of services, including home delivery of oil, equipment installation, removal and repair, annual customer maintenance reminders, annual customer inspections, all backed by a 24/7 service guarantee.

Timely, accurate and readily available information is critical to Petro's customer service activities and overall business success. To support this endeavor, Petro maintains a Windows-based data center in Long Island, New York. Here Petro's IT department supports a 60-server Citrix MetaFrame environment that is the front end to virtually all of the company's custom and off-the-shelf applications. From accounts receivable to oil-delivery management, this system is where Petro's employees perform and track their day-to-day business activities.

THE CHALLENGE

Initially, to support its 60-server MetaFrame environment, Petro used a two-node active/passive cluster of Windows 2000 servers hosting two separate network file shares. As its user population grew and performance began to suffer, Petro's IT department added another two-node active/passive cluster to host one of the critical shares — the home directory share. It was a temporary fix, at best.

The home directory share is where all personal and custom settings are stored for launching the MetaFrame environment. It also acts as a workspace — caching data for browser-based business applications. With close to 1,000 users hitting this share, the MetaFrame environment became noticeably sluggish. More than a half-dozen times a day, during peak periods, users were experiencing 10-second delays in their file response times. Even the normal response time of five seconds was considered less than acceptable for this mission-critical system.

Petro's IT department was running into a performance barrier. Using the existing approach, the only way to solve the problem would have been to deploy more active/passive clusters. This approach would have meant investing in redundant hardware, breaking up the volume and manually partitioning the data across servers. In addition to increasing Petro's capital expenditures, this approach would create significant administrative headaches. More active/passive servers would have to be managed, with a separate back-up job for each data silo. Furthermore, increasing the performance in this manner would only multiply the financial and administrative strains on the organization.

Petro also considered a network-attached storage (NAS) appliance. But, such a solution certainly did not fit their goal of keeping costs to a minimum. Plus, the NAS appliance would have required redundancy for availability, further pushing its costs out of the ballpark.

In addition, Petro wanted to keep both its capital expenditure costs and its operational expenditure costs to a minimum. The three-person team that managed the system was very concerned with easing the administrative demands. Ultimately, they wanted to keep the volume in one place, with multiple servers providing simultaneous access to the volume. And from a performance standpoint, they had a goal of delivering two-second file-response times for the users.

THE SOLUTION

Through Petro's existing relationship with HP, its IT department became aware of PolyServe's Matrix Server for Windows shared data cluster software and PolyServe's strong partnership with HP. In Matrix Server, they saw how all their objectives could be met immediately, and in the future. With Matrix Server, they could deploy a highly scalable, fault-tolerant file services platform that could grow with the demands of their business.

> *"We needed a more efficient, more elegant approach to our computing problems. PolyServe was the only solution that provided capacity on-demand computing coupled with operational simplicity and built-in resiliency."*
>
> ***Drew Salvatore***
> ***Director of Enterprise Technology,***
> ***Petroleum Heat & Power Co., Inc***

PolyServe Matrix Server for Windows delivered benefits no other Windows file serving solution could offer:

- Server Consolidation — Petro could reduce the number of servers allocated to file serving and improve the overall server and storage utilization by consolidating multiple file servers onto a single scalable, fault-tolerant cluster.

- Reduced Operating Expenditures (OPEX) — Petro could efficiently manage their servers, storage and SAN as a single coherent entity.

- Increased System Uptime — Petro could meet its uptime service levels. PolyServe software constantly assesses server, network and storage health, ensuring applications continue to function despite a failure anywhere throughout the cluster.

- Increased Flexibility and Growth — Petro can pay as it grows. Processing and storage capacity is added when demand dictates.

In the Matrix Server cluster, all servers can be "active," concurrently reading and writing to a shared storage volume. There is no need to manage or pay for "passive" under-utilized servers. There is also no need to divide data and clients among servers, replicate data among servers or monitor and provision free space separately on each server.

Instead, all servers in the cluster can export a single set of file systems simultaneously. Because Matrix Server has been designed with a completely symmetric architecture, there is no "master node" to potentially create a bottleneck in performance or a single point of failure. Each server in Petro's two-node cluster contributes incremental resources to the cluster — network bandwidth for client requests and replies, CPU capacity for file system processing, and I/O bandwidth to storage. Plus, each server in the cluster is equally able to perform all file system operations.

In the case of scalability and performance, every incremental industry-standard server added to the cluster will enhance the performance available to Petro's user base. Even better, scaling out servers can be done without interrupting client service and without requiring any migration of data. Client demand can be balanced among servers automatically using Microsoft Distributed File System. And free space is shared among all servers, simplifying storage provisioning.

"We constantly acquire companies, which translates into more users and more data in the computing environment. With Matrix Server, Petro can easily accommodate this growth by adding processing and storage capacity on demand."

Steve Loizeaux
Vice President, Information Technology
Star Gas Partners, LP

With its Matrix Server-enabled Windows file-serving cluster, Petro now enjoys built-in fault tolerance. The Matrix Server cluster is able to detect and respond to failures at the network, storage, servers and operating system levels

And finally, Petro achieved tighter administrative control over its infrastructure with PolyServe. The PolyServe solution reduced the number of "boxes" to administer. Matrix Server removed the complexity in terms of managing SAN infrastructure and storage administration tasks, like provision and backup. In short, the consolidated Matrix Server environment allowed Petro's IT group to centrally manage the servers, applications and storage from one central control point.

RESULTS

Petro's Windows file serving cluster powered by PolyServe has been in production since February 2004. Immediately, Petro experienced a dramatic increase in performance. Peak response times that dragged at 10 seconds consistently came down to two and three seconds — a 3x improvement in performance.

"What we really care about is the user's perspective. And from a user's perspective, PolyServe Matrix Server has improved file response times 300% at peak usage. That's an incredible performance improvement."
Steve Loizeaux
Vice President, Information Technology
Star Gas Partners, LP

The three-person IT staff also reported that their time was being better spent. By avoiding a partitioned-server approach, the team was able to avoid deploying multiple servers, mounting separate volumes, migrating data, doing multiple back ups and administering twice as many servers.

While Petro's current Matrix Server volume is only 300 gigabytes (GB), it does contain hundreds of thousands of files. From a system administration point of view, the team has gained a critical advantage by being able to back up all this data from a central point.

"From an administration perspective, Matrix Server has been invaluable. We consolidated our server and storage environment, gained greater control, and simplified our infrastructure. We're simply getting a lot more work done."
Drew Salvatore
Director of Enterprise Technology
Petroleum Heat & Power Co., Inc

Growth at Petro is nearly a sure thing. The company is very active in acquiring and integrating new ventures into its existing IT infrastructure. As a result, these acquisitions will undoubtedly add more users to the computing environment. As the user population and computing demands grow, Petro plans to simply scale out their Matrix Server cluster with additional cost-effective, industry-standard servers – providing a simple, clear growth path for its infrastructure.

CONFIGURATION

To support its 60-server Citrix MetaFrame environment, Petro deployed a two-node cluster of 3.4 GHz, dual Intel Xeon processor HP ProLiant DL380 servers. The cluster runs PolyServe Matrix Server for Windows software and Microsoft Windows 2000. Storage is provided through the HP StorageWorks Modular Smart Array 1000 storage system with built-in, 4-port switches. At production, the cluster was efficiently serving hundreds of thousands of files to more than 1,000 users, with approximately 450-500 users per server in the cluster.

PolyServe, Inc.
20400 NW Amberwood Drive, Suite 150
Beaverton, OR 97006
Toll Free: 877-765-7378
Tel: 503-617-7574
Fax: 503-617-7592