Case Study

Intel® Xeon® Processors

Cloud Storage

Expedient Moves to Intel®-based Platform to Meet Burgeoning Demand for Cloud Storage

Expedient Data Centers plans to move from proprietary storage to a reliable, high-performance, open storage platform based on Intel® Xeon® processors to cost-effectively support growth in enterprise cloud services.

"With the higher compute capabilities of Intel Xeon processors, we're seeing a 40 to 100 percent increase in capacity utilization. It's allowing us to store twice as much—basically giving us a 50 percent reduction in our overall storage cost."

—Alex Rodriguez
Vice President of Systems Engineering and Product Development
Expedient

Summary

Challenge	Due to fast-growing demand for Expedient's cloud services, the company's storage capacity requirements are more than doubling annually. Expedient needs a high-performance, cost-effective storage platform that can easily scale to support continued growth.
Solution	Expedient plans to move from a largely proprietary storage environment to an open storage platform based on Intel Xeon processors, 10 gigabit Intel® Ethernet Converged Network Adapters (Intel® Ethernet CNAs), and Internet Small Computer System Interface (iSCSI). Expedient anticipates that the additional performance and efficiency of Intel®-based storage will support continued demand growth while reducing storage total cost of ownership (TCO) by 50 percent[1] and enabling emerging usages such as big data analytics.

Addressing Cloud Storage Growth

Expedient is a cloud and co-location service provider focused on delivering infrastructure as a service (IaaS) to customers nationwide from data centers in Boston, Baltimore, Pittsburgh, Cleveland, Columbus, and Indianapolis, with a total footprint of about 220,000 square feet.

Demand for Expedient's cloud services is growing rapidly as its customers move more applications and data to the cloud. As a result, the company is experiencing dramatic increases in storage costs, with demand for capacity more than doubling year over year.

To support continued growth, Expedient needs scalable storage that's highly cost-effective while offering enterprise-grade performance and reliability. That presents a challenge, explains Alex Rodriguez, Vice President of Systems Engineering and Product Development at Expedient. In contrast to Expedient's cloud environment, which uses servers based on Intel Xeon processors, Expedient's existing storage consists primarily of proprietary systems linked by specialized Fibre Channel (FC) storage area networks. "Our storage environment today is the last proprietary platform in our cloud designs," Rodriguez says. "That adds considerable cost and management overhead."

To meet current and future requirements, Expedient realized that it needed a new standard storage platform that is:

- Highly scalable and cost-effective, while offering enterprise-grade performance and reliability.
- Based on standard platforms and networking.
- Capable of supporting new requirements for analytical processing and encryption without incurring significant performance penalties.

Moving to Open, Highly Scalable Cloud Storage

Expedient determined that its next-generation storage platform will be based on Intel Xeon processors and 10 gigabit Intel Ethernet CNAs. "When we can convert to an open standard, we've got a platform that gives us the performance and reliability that we need in an enterprise-grade cloud, but at the same time is extremely cost-effective and able to scale with our business," Rodriguez says. "The Intel Xeon processors also provide the low power consumption we want. That allows us to reach greater storage densities in our data centers, which we need to meet our demand for growth."

Reducing Storage and Networking Costs

Expedient's in-house lab works on new product development, including the company's next-generation storage architecture. Testing to date has verified that the new Intel-based storage platform delivers much higher performance and scalability than their current proprietary system while greatly reducing TCO. The compute performance of Intel Xeon processors enables Expedient to apply technologies such as data compression and deduplication, which effectively increase storage capacity by freeing disk space. "By using that higher compute capability, we're seeing a 40 to 100 percent increase in capacity utilization with very little overhead," Rodriguez says. "It's allowing us to store twice as much for the same cost—basically giving us a 50 percent reduction in our overall storage cost. Additionally, Intel continues to deliver better and better performance in each new generation of Intel Xeon processor, so we continue to see better and better performance results."

The shift to Intel Xeon processors and Intel Ethernet CNAs is also expected to reduce management and networking costs. "Intel® architecture is ubiquitous in our cloud environment," Rodriguez adds. "Having a common standard architecture creates huge benefits for us. We can greatly reduce cost and complexity." Ethernet already forms the backbone of Expedient's cloud environment, and using iSCSI will reduce storage cabling costs. "With 10 GbE we can use standard CAT 6A cables. Something that might cost us several thousands of dollars for a Fibre Channel run today will cost only a few hundred dollars."

Meeting Requirements for Data Protection and Analytics

With growing regulatory requirements to protect personal and other sensitive data, Expedient is keenly interested in Intel® Advanced Encryption Standard New Instructions (Intel® AES-NI), the hardware-based encryption built into Intel Xeon processors. "Customers are looking to make sure their data is protected," Rodriguez says. "This allows us to encrypt and decrypt data on a massive scale, with very little overhead."

The new platform will also position Expedient for emerging cloud trends that demand additional processing power, such as big-data analytics. "We see this as an opportunity as well as a challenge," Rodriguez says. "Today, customers are storing more and more data in the cloud, but they haven't yet tapped it for analytical purposes. We think they're going to want to interact with that data and analyze it to extract business value. The more performance we get from our storage servers, the more analytical processing they'll be able to do."

Conclusion

Expedient expects the transition from proprietary storage to a high-performance, reliable platform based on Intel Xeon processors and 10 GbE Intel Ethernet CNAs will enable the company to support dramatic cloud storage growth while containing costs. Adopting a common architecture for both compute and storage helps Expedient simplify its cloud environment while supporting future usage models such as big-data analytics.

For more information about Intel®-based storage solutions, visit www.intel.com/go/storage.

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1 The TCO or other cost reduction scenarios described in this document are intended to enable you to get a better understanding of how the purchase of a given Intel product, combined with a number of situation-specific variables, might affect your future cost and savings. Circumstances will vary, and there may be unaccounted-for costs related to the use and deployment of a given product. Nothing in this document should be interpreted as either a promise of or contract for a given level of costs.

Intel® AES-NI requires a computer system with an AES-NI enabled processor, as well as non-Intel software to execute the instructions in the correct sequence. AES-NI is available on select Intel® processors. For availability, consult your reseller or system manufacturer. For more information, see http://software.intel.com/en-us/articles/intel-advanced-encryption-standard-instructions-aes-ni/

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