SUMMARY

Corporations today strive to deliver better, faster service to customers in more cost-effective ways. But rarely can a business achieve all three goals at one time. Storage as a Service (STaaS) Store Flash can provide this opportunity. The solution improves application performance 15 times over traditional disk arrays, while reducing data center sprawl. STaaS Store Flash also reduces power and cooling consumption in the data center, delivering additional performance and efficiency at a price that’s competitive with traditional disk array technology.

As businesses become more dependent on applications, data storage and retrieval become critical factors for enterprise success.

In the past decade, the traditional disk drive has undergone few improvements. Drives have not advanced beyond 15,000 RPM, because the cost is disproportionate to the gains. However, the density of the drives has increased by magnitudes, negatively affecting the input/output [operations] per second (IOPS) per GB density. In addition, CPU performance has increased, per Moore’s law, pushing the bottleneck to the storage layer.

When a drive can’t process transactions fast enough, latency occurs. If severe enough, latency — the delay between a data request and when the data returns to the application — terminates an application to protect data integrity. This results in unpredictable system performance and can lead to application outages.

To compensate for these issues, modern midrange and enterprise storage arrays use wide striping with expensive cache. The systems split data across hundreds or thousands of hard disk drives to get better overall performance. And the cache, using complex algorithms, supplements the limitations of the hard disk drive. To ensure that an application meets user needs, a business may have a piece of data that should fit on one or two hard drives split over hundreds of drives in a data center.
While this solution may meet performance needs, it is hardly efficient. Data arrays consume massive amounts of floor space and drive power and cooling consumption.

A typical storage environment can:
- Generate 116,000 BTU per hour
- Consume 35 kVA
- Use up to six floor tiles of data center space

Flash has recently been introduced to create a hybrid configuration. This solution augments cache to provide a blended service class based on a mix of drive types. While flash improves performance, it has not addressed predictability and, in some cases, has increased operation complexity.

Adding to the problem is the issue of additional data copies. As applications become more critical to a business, data is typically copied to other locations for operational recovery, disaster recovery or reporting. These additional copies exacerbate the disk sprawl issue. Many organizations choose to copy the data to slower disk platforms or magnetic media to reduce the cost of storage. Unfortunately, these cost-effective copies are too slow for production purposes and require an additional performance-centric disk for production use.

It is not uncommon to see six to eight copies of data from an application. And in development environments, a business might have 20 to 40 copies of the system running. These development instances require more performance than an idle copy, and building and destroying various copies of data for testing purposes require storage administration work, which wastes time in the development process.

CHARACTERISTICS OF CSC’S ALL FLASH ARRAY SOLUTIONS

Performance
To combat these challenges, CSC offers All Flash Storage Array (AFA) solutions. AFAs deliver 150,000 transactions, or I/O per second, per 10 TB of storage. To compare, traditional disk array technology provides about 10,000 transactions per second, 15 times fewer than the all-flash model.

AFAs use nonvolatile, memory-based drive technology that eliminates seek times and rotational latency. In addition, with no moving parts, flash provides uniform performance for random and sequential operations. While the latency average for a traditional storage array is 8 milliseconds, with AFAs, latency is less than 1 millisecond. For many businesses, a switch to AFA technology can yield an 87.5% performance improvement.
How does this translate to business success? Here are three examples:

- In a software development environment, an 8-hour build time could be reduced to 1 hour.
- In a medical application environment, client screens process fast enough for a practitioner to see an extra five patients a day.
- The month-end close in many businesses, which can typically take 3 days to process, can be done in hours with AFA technology.

**Data Center Efficiency**

AFAs offer more efficient data storage. They can be stored in one data center rack, instead of the eight racks used by traditional storage arrays, an 83% reduction in floor space. And in high-performance compute environments, businesses see even more dramatic reductions in floor space associated with storage.

The consumption profile of power and cooling improves by 84% for AFAs. Typical power consumption of a traditional array is 35 kVA an hour; an AFA typically consumes 5.5 kVA an hour. On the cooling consumption side, AFAs use 18,000 BTU/hr.; traditional arrays consume 116,000 BTU/hr. These efficiencies translate to cost savings that improve an enterprise’s bottom line.

**Data Copy Management and Recovery**

AFAs allow businesses to store, at no cost, writable copies of data through data deduplication. This means the business can have, for example, six copies of its ERP database without paying for the additional data center floor space. Each copy can be independently written by application users, test users and developers without affecting other users.

AFAs provide a self-service copy-management capability, a unique benefit that enables application teams and authorized users to create or destroy data copies within a controlled business construct. For example, if a developer on the development team needs 20 test copies of the database, he or she can create and destroy those copies at no cost or impact to the business, beyond the cost of changed storage space. This helps drive upstream value by saving days and weeks of development time, improving time to market and cutting down on development costs.

AFA technology enhances application operations and disaster recovery through the zero-footprint copy technology. Point-in-time copies of data can be instantaneously created throughout the business day; the only additional cost is for the unique data written to each additional copy. If there’s an issue with the primary copy, the system can switch to an alternate copy of the data, putting an application back into operation within minutes.

In addition, any copy of the data can be replicated to a remote site for disaster recovery, with subsequent copies created within the disaster recovery site. This allows businesses to preserve a “gold” copy of the data while running on a second, writable copy.

**GETTING STARTED**

CSC account teams are ready to bring this technology to your environment with STaaS (Storage as a Service) with AFA options. Delivered in a utility form factor, the solution has the flexibility your business needs to handle the rapid changes of today’s digital world. With standard, mature assessments and migration factory processes, CSC can build and transform your data center into a state-of-the-art, high-performance flash environment.
CONCLUSION

If your business needs to improve application performance and predictability, while reducing development times and energy uses, AFA may be the answer. Flash technology is a cost-effective replacement for tier 0 and tier 1 application environments with many benefits. Reduced space and consumption, as well as improved operational and disaster recovery strategies, make AFA an attractive solution. Over time, this technology is expected to displace all storage tiers, except low-performance and archive types. Businesses that make the change now can get a jump on the competition and set themselves up for success.

Learn more at csc.com/storage_as_a_service.