



## Solution Brief

# Changing the economics of storage with Dell Compellent Flash-optimized solutions

Dell™ Compellent™ Flash-optimized solutions can help organizations align storage performance with application requirements and optimize both performance and capacity. Compellent all-flash and hybrid-flash configurations:

- Accelerate application performance for I/O intensive workloads such as OLTP, Data Warehousing and VDI.
- Deliver up to a 5x price advantage over competitive all-flash configurations and up to a 2x price advantage over competitive hybrid solutions.
- Reduce costs up to 80% compared to other flash-optimized solutions<sup>1</sup>.
- Store unstructured or cold data efficiently on ultra-dense storage enclosures.
- Provide enterprise-class storage features.
- Extend the economic value of Compellent, a multi-purpose storage solution designed for exceptional scalability and operational efficiency.

## Traditional “one size fits all” storage strategy no longer works

As the exponential data growth and an increasing pressure on the data center to become more efficient continues, a traditional “one size fits all” strategy for storage design is no longer adequate. Today’s application workloads have a wide range of characteristics, compelling IT administrators to understand the performance needs, access frequencies, I/O patterns and business value of the data before they can design the best architecture for a storage system. Since each workload has different performance, capacity and cost requirements, traditional storage platforms based on a single drive type will not work effectively.

Trends such as server virtualization, proliferation of multi-core processors and a rising adoption of desktop virtualization are increasing the requirement for high I/O performance with low latency and very fast response times. On the other side of the spectrum, an explosive growth of unstructured data drives the need for capacity-optimized storage. These escalating but opposite requirements leave IT managers looking for storage that can efficiently handle both hot and cold data, at the right price point.

## Flash solutions delivers the needed performance

Flash storage is available in a variety of form factors ranging from PCIe-based solid state drives (SSDs) in application servers to flash appliances and all-flash or hybrid-flash arrays. While flash can deliver impressive results by eliminating rotational and seek latencies that are common in traditional hard drive-based storage systems, its price point only makes it appropriate for improving performance of the highest priority workloads. As flash has become more affordable, it is being gradually deployed in larger capacities, with flash drives used as a dedicated storage tier in many enterprise arrays.

## Where is flash storage most effective?

Flash storage delivers the biggest boost when used for highly transactional, data-intensive workloads with random I/O, such as:

- OLTP systems behind ecommerce websites, store registers, ATM machines, where the real time responsiveness is.
- Data warehousing systems used for data mining, trend analysis and hypothesis testing, vital to the formulation of business strategy.
- Virtual Desktop deployments where reducing the desktop logon times during boot storms, maintaining high host IOPS and throughput are essential to end-user adoption.

## Compellent changes the economics of flash storage

Compellent, Dell enterprise-class, unified block and file, highly scalable storage changes the economics of flash storage and opens up the use of flash to a broader set of deployments at a more accessible price point. In the newest enhancements to the Compellent platform Dell leveraged advancements in flash SSDs and linked them to the improvements in the Data Progression advanced storage tiering software, driving down costs of storage to the level where flash performance can be offered at the price of a rotating disk<sup>2</sup>.

Compellent Flash-optimized solutions, which include all-flash and hybrid-flash arrays, are made possible by the introduction of higher capacity, lower cost read-intensive (RI) MLC SSDs, and combining them with the enhancements to Data Progression which can now tier flash across the high endurance, high performance write-intensive (WI) SLC SSDs and (RI) MLC SSDs, disrupting the current flash cost model. These tiering innovations enable a dramatic reduction of \$/GB and effectively deliver flash performance at the price of a traditional rotating disk. When compared with SLC-only competitive flash systems, an all-flash Compellent array with a blend of SLC and MLC SSDs offers up to an approximate 2x price advantage over competitive hybrid solutions, and up to an approximate 5x price advantage over competitive all-flash solutions<sup>1</sup>.

## Aligning storage performance with workload requirements

Aligning storage performance with workload requirements allows IT managers to match the application performance needs with the optimal system cost and \$/GB. A Compellent platform can be configured as:

- All-flash for the most demanding Tier 1 application workloads which require very low latency and scalability and can benefit from the placement of entire datasets in flash.

- Hybrid-flash for general workloads where performance can be dynamically increased with limited flash capacity for selected workloads, and cold or infrequently-accessed data is placed on capacity-optimized HDDs.
- HDD-based storage where large capacity and the lowest \$/GB is needed for the non-performance sensitive data such as backup and archive.

## Compellent: a multi-purpose storage platform with enterprise features

Architected to enable the most efficient use of every disk, tiered flash innovations further extend the economic value of Compellent while bringing higher performance to the workloads that need it. A multi-purpose storage platform, Compellent provides enterprise-class features such as thin provisioning, automated tiering, replication, unified file and block storage, replays, and 3rd party integrations, to ensure the highest utilization of storage resources. The platform brings value to customers through a variety of other innovative features, such as seamless capacity scalability across block and file data without rip-and-replace upgrades, and a perpetual software licensing model which ensures that customers never need to re-purchase the same software again, making Compellent a future-proof platform which can evolve to address changing customer needs.

With a complete portfolio of primary, archive and backup products, Dell offers a broad choice of storage solutions for various enterprise needs. Dell's storage portfolio is designed to help organizations more effectively manage valuable business information in virtualized data centers.

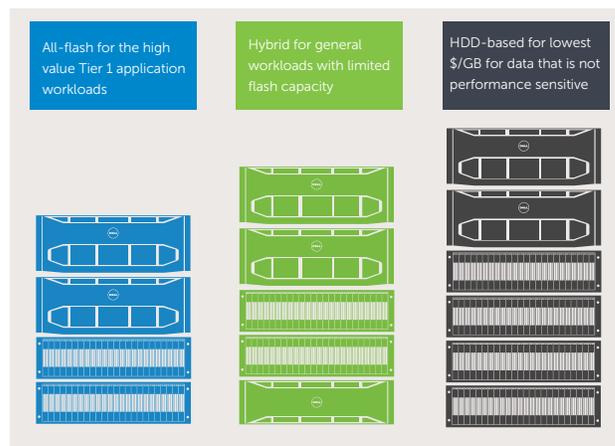


Figure 1. Compellent aligns storage performance with workload requirements to deliver the highest value to the customer.

<sup>1</sup>Competitive US list pricing from Gartner Inc, CP Storage, as of June 2013. Market price calculated assuming a discounting of approximately 50% for all competitive systems and Dell Compellent.

<sup>2</sup>The Dell Compellent all-flash solution costs less than a comparable 15K disk drive solution based on internal Dell analysis in July 2013 using Dell Compellent flash-optimized and spinning disk US list pricing.

For more information, go to [Dellstorage.com/Compellent](http://Dellstorage.com/Compellent) or [Dell.com/Compellent](http://Dell.com/Compellent)

