IDC ANALYST CONNECTION

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Flash, Cloud, and Software-Defined Storage: Trends Disrupting the Market

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IDC predicts that cloud storage capacity will exceed 7EB in 2014, driven by strong demand for agile and capex-friendly deployment models. Furthermore, IDC predicts that by 2015, big data workloads will be one of the fastest-growing contributors to storage in the cloud. In conjunction with these trends, meeting service-level agreements (SLAs) for performance is a top IT concern. As a result, enterprises will increasingly turn to flash-based storage solutions to accelerate performance.

The following questions were posed by Hitachi Data Systems to Eric Burgener, research director for IDC's Storage practice, on behalf of Hitachi Data Systems' customers.

Q. What high-level industry trends will drive the evolution of IT over the next three to five years?

A. Four major industry trends — mobile, social media, big data, and cloud computing — are remaking the face of the overall IT industry and driving the emergence of a new computing architecture that IDC refers to as the "3rd Platform." Agility is a critical capability of this emerging platform. Extremely flexible business responsiveness is the hallmark of successful companies today, and enterprises are continually looking for improved ways to meet the needs of their customers. The widespread access to IT services that mobile computing has enabled is driving the need not only for increased agility in how computing resources are allocated and managed but also for an IT infrastructure that is up and delivering value 24 hours a day.

Social media applications are generating huge volumes of data that enterprises are collecting and analyzing as they look for more effective ways to market to potential customers. Within this year, data volumes will continue to explode to 6 billion terabytes and IT spending on big data will grow by 30%. Enterprises are leveraging new storage technologies to help them manage these huge data volumes in an increasingly dynamic world, and cloud will be a critical contributor here. IDC expects cloud spending to surge by 25%, reaching over $100 billion by the end of the year.

Q. What new IT infrastructure requirements will be set by these trends?

A. To provide the responsiveness that line-of-business executives demand today requires a very flexible IT infrastructure that can easily and nondisruptively provision or retire resources, cost-effectively deliver required levels of performance, accommodate massive growth, and provide continuously available access to applications. Recent research from IDC indicates

that managing data growth and meeting SLAs for performance, availability, and reliability are the two most pressing concerns of IT administrators. Tight budgets mean that the span of administrative control will increase significantly as IT infrastructures evolve to provide improved agility and better value. Automated operations will be critical in allowing administrators to reliably manage more applications, more servers, and more storage.

Virtual computing, already in use on almost half of deployed servers in enterprises today, is a critical enabler of better IT agility, improved resource utilization, and more automated operations. Virtualization is a foundation technology in the emerging 3rd Platform, and many enterprises already have a "virtual first" strategy for new application deployment. Cloud is another critical component of the 3rd Platform, supporting reliable, self-service access to computing resources for end users that help further reduce the burden on administrators.

Q. What impact will these new requirements have on enterprise storage infrastructures?

A. Storage infrastructures will have to accommodate the need for agility, supporting dynamic storage resource provisioning and retirement. Software-defined storage promises to provide this flexibility, allowing storage resources to be allocated without physical restrictions and storage operations to be performed quickly and easily. Storage solutions must be modularly scalable, able to support massive amounts of storage, and include storage efficiency features like thin provisioning and deduplication to make the most efficient use of available capacity. They must support continuous availability, not only during normal operations but also during administrative operations like expansion, reconfiguration, and upgrades, and they must provide this availability for both local configurations and disaster recovery configurations.

The increasingly widespread use of virtualization puts new demands on storage solutions. Flash must be a supported option on these systems to handle the heightened IOPS requirements of virtual environments, and it must be managed efficiently with tiering and other software that allows customers to maximize limited flash capacities.

Storage systems must continue to deliver on basic data services like snapshots, clones, replication, and APIs that enable integration with popular hypervisors and applications for improved operations. With more different types of devices, both static and mobile, depending on data access on a round-the-clock basis, reliability takes on a heightened importance. Storage vendors that thrive in this new environment will deliver bulletproof solutions that can always be depended on to maintain data integrity, no matter what.

Q. How will enterprise storage solutions deliver improved value over time?

A. Storage solutions will also need to provide better value than they have in the past, delivering predictable performance for mixed workload environments even as configurations scale. Quality-of-service (QoS) capabilities that reliably deliver performance as well as handle the "noisy neighbor" problem will quickly become foundation requirements for enterprise storage solutions.

Densities must continue to increase not only for storage capacities but also for connectivity and include mixed protocol support to better enable storage consolidation that lowers cost. Storage efficiency technologies like thin provisioning and deduplication are important, and the ability to integrate flash into a flash-optimized storage architecture will allow companies to handle performance needs more cost effectively and reduce storage capacity and energy requirements.

Automated operations are critical in supporting the increased span of administrative control driven by tight budgets even in the face of massive data growth. Automation must be applied not only to storage operations such as provisioning, snapshot, and replication schedules but also to workflows that require integration into hypervisor and application layers.

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Enterprises will increasingly evaluate storage solutions not on initial purchase price but on total cost of ownership over time. The ability to support more storage consolidation while still meeting performance, availability, and reliability requirements will drive up the value of storage solutions, and customers should look for storage platforms that enable dense consolidation across a variety of different workload types.

ABOUT THIS ANALYST

Eric Burgener serves as a research director for IDC's Storage practice, which includes Storage Systems, Software, and Solutions research offerings; quarterly trackers; end-user research; and advisory services and consulting programs. Mr. Burgener's areas of coverage include flash (from a solutions, not a component, point of view), data protection, and storage virtualization solutions.

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