



The Future for Data Storage is Unified

The 451 Take

Despite the benefits of the current transition from disk-based to all-flash datacenter storage, data growth is still driving up costs and administrative workloads for enterprise IT. Meanwhile, IT departments are under increasing pressure to become more agile and more able to meet business demands for fast-paced application development and deployment. These facts continue to drive the evolution of storage systems. One area of progress has been the erosion of boundaries between two types of data – namely block-level or block data, and file data.

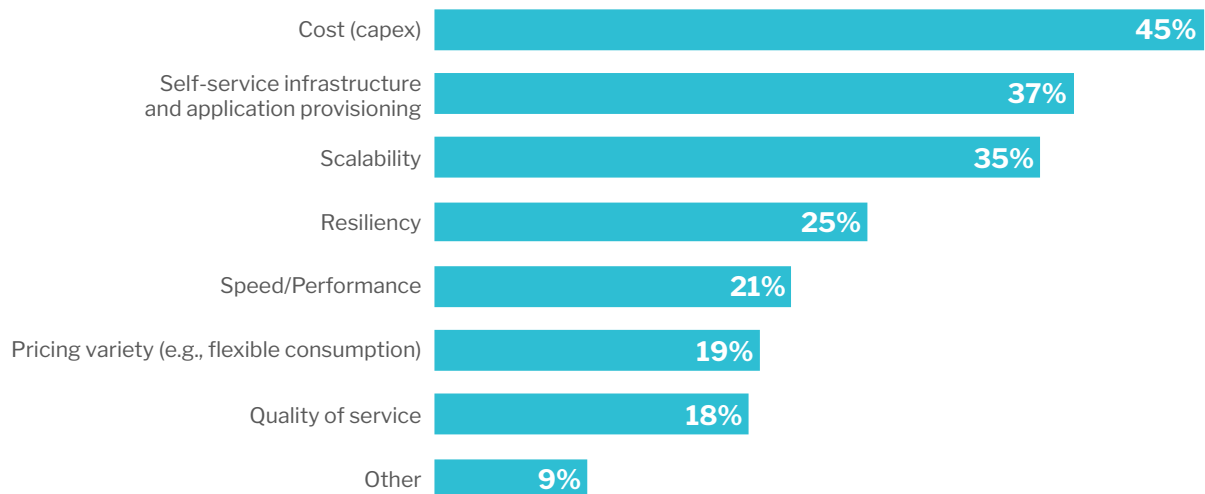
Many business applications such as databases and email systems access data as blocks, especially if they are performance-sensitive applications. This is often simply called block data. File data is equally important to enterprises because it includes documents, images, video recordings, backups and web pages, etc. Not surprisingly, file data has been growing far faster than block data for the last two decades.

Pain Points Regarding On-Premises Infrastructure

Source: 451 Research, Voice of the Enterprise: Storage, Workloads and Key Projects 2019

Q: Which of the following are the biggest pain points regarding your current on-premises infrastructure?

Base: All respondents (n=159)



The two types of data are accessed using different protocols, and they have historically been handled by separate storage systems. However, systems that can accommodate both types of data are becoming more commonplace. Described as providing unified storage, such systems can reduce costs and improve IT efficiency in multiple ways. But there is more to unified storage than simply the ability to simultaneously handle block and file data. IT organizations not only need to understand the benefits of unified storage, but also what to look out for when evaluating systems.



Business Impact

SYSTEM CONSOLIDATION CUTS COSTS, BUT WATCH FOR PERFORMANCE. Unified storage reduces the number of storage systems needed by enterprises, cutting administrative workloads and freeing up staff for developing and implementing new applications. Costs are also cut by reduced consumption of physical space, power and cooling. However, some unified storage systems impose the penalty of low performance when handling block data. Because many business-critical and performance-sensitive applications require block-level access to data, this is a critical issue.

UNIFIED STORAGE CAN SIMPLIFY ADMINISTRATION, IF THE TOOLS ARE RIGHT. Unified storage can also cut costs by providing a single set of tools to manage services for both block and file data. This streamlines a range of tasks involved in data protection, disaster recovery and storage provisioning. However, this benefit varies greatly across unified storage systems according to the depth of integration of their block and file management services.

APPLICATION-SPECIFIC FLEXIBILITY IS ENABLED BY UNIFIED STORAGE. Some applications will work with either file or block-level data access. Although performance is usually greater when using block access, data management is simplified for some applications when using file data access. Unified storage systems give IT organizations maximum flexibility when making these choices, for example by providing block access to databases for optimum performance, and file access for server virtualization or backup management systems.

BETTER RESOURCE UTILIZATION, IF BLOCK AND FILE CAPACITY ARE SHARED. The continuing rapid growth of enterprise data volumes forces IT organizations to overprovision storage capacity as growth headroom. Some unified systems allow this headroom to be shared across block and file data, reducing costs. Others do not enable this cost reduction because they handle block and file storage as entirely separate resources.

VARIED DATA REDUCTION MECHANISMS. Data reduction mechanisms such as deduplication can cut raw storage capacity requirements heavily, but for unified storage, there is much variation in their effectiveness and hence the cost savings they deliver. Greater savings are delivered by mechanisms that eliminate duplication globally across all the data stored by a system, rather than only within discrete data volumes or file systems. For file data, eliminating duplication by comparing data blocks is more effective than only comparing entire files.

Looking Ahead

Usage of unified storage will continue to be driven by IT organizations' need to reduce costs and increase their flexibility or agility, and by the continuing existence of block and file data. Although block data is not growing as fast as file-level data, it is a permanent part of the IT landscape and will not diminish in size or usage. A major reason for this is that transactional databases perform best when accessing data as blocks rather than files. On the other hand, file data growth is forecast to increase further by emerging technologies and IT trends. Edge computing and the Internet of Things will generate more file data, as will the growing use of real-time data analytics. Analytics is a data-intensive workload and, therefore, highly sensitive to storage system performance. That contrasts with the large volumes of end-user-generated data such as documents that generally do not require high-performance storage.

This mix of performance requirements is developing while enterprises' primary data storage is transitioning from disk-based to all-flash storage, and now to all solid-state storage, which combines flash with storage-class memories (SCMs). The combination of SCMs with the currently dominant TLC variant of flash and the emerging lower-cost but slower-performing QLC flash variant is set to enable unified storage systems to accommodate a range of performance requirements while minimizing costs. A subset of unified storage provides object-level access to data alongside block and file-level access. This object support will increase over time, but this will be a long-term trend because only a minority of primary or working data is currently accessed as objects.



Learn more about our unified storage offering [here](#).