



I D C T E C H N O L O G Y S P O T L I G H T

Next-Generation Software-Defined Storage Tackles File-Based Storage

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This paper examines Veritas Access, a software-defined file-based storage (FBS) solution. It also looks at the role, advantages, and benefits of next-generation FBS solutions and their value in the long run. This paper discusses Veritas' extensive experience in the storage space, especially with unstructured data, which aligns with the demands of today and tomorrow.

Introduction

Digital transformation (DX) defines business objectives and, in turn, IT strategies. The 3rd Platform is seeing unprecedented data growth stemming from new business strategies that use mobile devices and social platforms. According to IDC's enterprise storage systems forecast, storage capacity deployed will reach 585.7EB by 2021, growing at a 26.5% compound annual growth rate (CAGR). Much of this growth in storage capacity is fueled by growth in unstructured data such as emails, audio/video files, and images across different vertical markets such as healthcare, oil and gas, media and entertainment, telecommunications, and manufacturing.

IT organizations are faced with several issues because of unstructured data growth. Some issues are managing the data sprawl across disparate and potentially aging storage infrastructure and keeping data secure in the event of a disaster. At the same time, IT organizations are tasked with supporting new business objectives, reducing costs, and delivering additional granularity on data via analytics and reporting.

Historically, the storage requirements for unstructured data were addressed by traditional network-attached storage (NAS) solutions predominantly sold as turnkey appliances (pre-bundled hardware and software). To support data growth, new NAS solutions need to be deployed to satisfy increased performance and/or capacity requirements, as well as the need for data to be managed separately.

Overhead stemming from management of disparate storage solutions is increasingly a pain point for IT organizations, in addition to other factors such as floor space, power, and cooling costs. To tackle these issues, IT organizations are evaluating newer technologies such as software-defined storage (SDS), all-flash arrays (AFAs), object-based storage, and cloud-based storage services to ensure that their IT strategies are future proof. Some key requirements of next-generation NAS solutions are:

- **Global management and control:** Management of disparate storage environments through a single pane reduces management overhead, allowing organizations to gain control of their IT infrastructure and data. Analytics and reporting on data generated and stored anywhere enable organizations to generate new revenue streams from deeper insights on product/service innovations per customer needs.
- **Efficiency initiatives and cost savings:** Organizations can adopt newer technologies such as SDS and cloud-based storage services to keep costs in check. Efficiencies can be achieved by augmenting, retiring, and/or replacing existing applications while implementing them on the appropriate storage technology.

- **Future proofing IT investments:** Huge data growth is a fact of life. The amount of data generated and stored continuously will only increase. Organizations must leverage new technologies that are easy to scale in terms of performance and capacity while strategizing for the future. Oftentimes, organizations are looking to adopt storage solutions supporting multi-protocol data access (file/block/object) as one solution to serve many applications and use cases.
- **Mitigating risk factors:** IT organizations are mandated to keep data secure from security threats and/or natural disasters and to be compliant with regulations. A storage solution that supports flexible information life-cycle management (ILM) policies and tiering to the appropriate storage tier is therefore preferred, thus allowing multiple copies of data to be stored across storage locations.
- **Aligning IT projects:** Organizations can choose a combination of storage technologies, such as platform as a service (PaaS), infrastructure as a service (IaaS), cloud-native applications, on-premises, or hybrid cloud, to rightsize their workloads (even high amounts of unstructured data) to ensure efficiency in spend and management.

Traditional NAS: Limitations and Evolution

Initially, traditional appliance FBS systems, or NAS, tackled the issue of many discrete file servers that needed to be deployed and maintained independently. Traditional NAS systems offered a new approach that enabled multiple clients on a network to gain access to a common data set simultaneously.

Data is organized in a hierarchical structure in files and folders with limited metadata and is accessed via NFS and SMB protocols. Typically, these NAS systems were available as appliances in various configurations with pre-defined performance and capacity nodes. Therefore, in the event of an increase in compute (or capacity) requirements, the only way to achieve the requirements was to deploy a new NAS system, thus increasing both performance and capacity, resulting in unnecessary expenditure.

As organizations struggled with the limitations of traditional NAS, storage suppliers introduced clustered scale-out NAS appliances as an alternative, which concurrently deploy distributed file systems on multiple nodes. New nodes can be added to grow the cluster for performance or capacity requirements. These systems are present as a single namespace and can be managed from a single pane of glass, regardless of the physical location of the devices.

Despite these advancements, however, as data growth continues and new nodes are added to the cluster, organizations struggle with increasing management complexity (e.g., retrieving specific data or guaranteeing performance for specific workloads) once seven to eight NAS arrays are deployed.

To gain better efficiencies in a world of current- and next-generation applications being run concurrently, end users considered and deployed a combination of newer storage technologies such as cloud-based storage services, object-based storage, and all-flash arrays to tackle some of their data growth, performance, and management issues. However, the challenge of siloed workloads and data has remained prevalent.

As a solution, file-based software-only SDS alternatives have grown in popularity not just because of added functionality but also because they can be installed on any commodity x86 server. The advantage of SDS solutions is not just cost savings by moving away from proprietary appliance-based storage solutions but also ease of flexibility to grow and support compute and storage requirements in support of primary, mission-critical workloads. Overall, any new scale-out NAS alternative, whether appliance or SDS, needs to support the following:

- Multi-protocol access that goes beyond traditional NAS (NFS/SMB/CIFS) to also support object and block access interfaces
- Reduction or elimination of data silos with seamless support for many deployment location (on-premises, private, public cloud) and tiering capabilities to object stores, including a public cloud of choice
- Integrated flash for optimal and predictive performance
- Additional and granular data insights to enable optimal policy-based data placement, thus supporting organizational accountability

File-Based Storage Trends

IDC recently conducted a file- and object-based storage adoption survey. Findings include:

- 34% of respondents have used FBS solutions for more than four years.
- 60% of respondents are considering either retiring or replacing existing FBS.
- The top 3 reasons for organizations to consider retiring or replacing their FBS infrastructure are high hardware costs, aging of FBS solutions, and concerns about scalability.
- 79.3% of respondents stated that the FBS infrastructure in their organizations supports primary, mission-critical workloads such as collaborating applications (e.g., conferencing, email, social networks, file sharing), content applications (e.g., content management, enterprise portals), and business applications (e.g., ERM and CRM).
- 68% of respondents stated that they have integrated flash in FBS solutions to increase performance (throughput) and to increase storage density.

Ultimately, the goal of any new FBS alternative is to allow IT organizations to focus on business outcomes by eliminating silos and unifying data. With next-generation FBS, businesses can take advantage of the flexibility to use the appropriate storage platform regardless of location (on-premises or private/public cloud). The platform may also use predictive performance for specific workloads by integrating flash, ease of management, scale, and uninterrupted service during upgrade cycles via SDS software. This, in turn, helps lower costs.

Considering Veritas Access

Headquartered in Mountain View, California, Veritas Technologies is an established player in the information management market. The company recently introduced Veritas Access, an SDS software offering that promises its users reliability, accessibility, and predictive performance for cloud-scale environments. Veritas Access runs on any x86 hardware and leverages flash to support predictive performance for user-defined workloads.

Veritas' vision for Veritas Access is simple. It is designed to empower end users to gain better visibility into and control of data regardless of location. At the core of Veritas Access is a file system that manages a single namespace over both on-premises storage and cloud-based storage.

Veritas Access can support up to 3PB in a single file system. Like many FBS solutions, Veritas Access supports inline deduplication and lossless compression capabilities. The solution also supports snapshots and periodic replication to recover data in case of data corruption or disaster. Veritas Access includes support for Amazon S3, CIFS, NFS, SMB for file and object access, and iSCSI target support for block storage. Features such as SmartIO and SmartTier support reach caching on SSDs for applications and data tiering to appropriate tiers across deployment locations, respectively. The solution supports LDAP for user authentication and provides capabilities to configure user, file system, or hard quotas. Veritas Access also supports application-based performance tuning for workloads such as media serving and virtual machine.

Key characteristics of Veritas Access include:

- **Cloud portfolio integration:** Veritas Access enables cloud as a tier with multi-cloud integration capabilities. Veritas Access currently supports data tiering to Amazon Glacier (directly), Amazon S3, Microsoft Azure, IBM Bluemix, Google Cloud Services, OpenStack cloud, etc.
- **Risk mitigation:** Veritas Access is integrated with the company's archiving platforms such as NetBackup, which is optimized as cost-effective secondary storage. Veritas Access is also integrated with Enterprise Vault for compliance/eDiscovery, thus providing added protection and peace of mind in the event of audits.
- **Policy-driven management:** Veritas Access policy management simplifies the provisioning of storage across multiple complex applications and storage systems, including multiple public cloud storage services, making storage provisioning easy to manage.
- **Veritas Access GUI:** Veritas Access can be managed through an easy-to-use and intuitive user interface that enables management of disparate storage infrastructure and also supports simplified policy-based data migration.

Today, Veritas Access supports a variety of workloads such as Internet of Things (IoT), telecom, media streaming, and long-term data retention. Veritas Access' go-to-market strategy is via channel partners as well as direct sales.

Challenges and Opportunities

The FBS market segment is mature and has been dominated by tier 1 vendors that sell NAS appliances. For a long time, traditional scale-out NAS appliances have supported the need for scale by clustering nodes and management via global namespace. Scale-out NAS solutions now need to adapt and support the new and changing requirements of the DX world where IT organizations strategize to use varied storage technologies and deployment locations.

IDC's *Changing IT Leadership: Part 5 – Partnering with Vendors and Suppliers* indicates that businesses require their IT vendors to provide new solutions, honor long-standing agreements, and display continued commitment to business outcomes. The same survey also found that organizations require their IT vendors to excel in technological capabilities, provide easy means to do business, and excel in the portfolio ecosystem. Veritas' experience in all of the previously mentioned areas puts the company in a strong position to be considered a committed and innovative storage supplier.

Gaining mindshare and market share for any new product is always a challenge. Strategic partnerships with technology providers, server vendors, and channel partners are a must to address this challenge. At the same time, given that a majority of respondents in IDC's file- and object-based storage survey indicated that they use appliance-based solutions for their FBS needs, Veritas should consider introducing Veritas Access as an appliance to address the needs of organizations that prefer this pre-bundled approach.

Conclusion

Unstructured data growth will cause many IT organizations to evaluate and deploy improved and future-proof storage technologies to address the increased needs of scalability, reliability, and performance, especially at lower costs.

Veritas' experience in the storage industry is unparalleled, with long-standing products such as NetBackup and Enterprise Vault and an extensive customer base. Veritas' recent investments in Veritas Access and other products are a testament to the company's vision of expanding and solidifying the Veritas storage information management product portfolio. The integration of Veritas Access with existing and established products such as NetBackup and Enterprise Vault makes the company's product portfolio compelling for end users. IDC believes that Veritas Access has the potential to gain market share because of the capabilities of the solution as well as the company's surrounding product portfolio.

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