

Technical Review

Pure Storage: FlashArray File Services

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Abstract

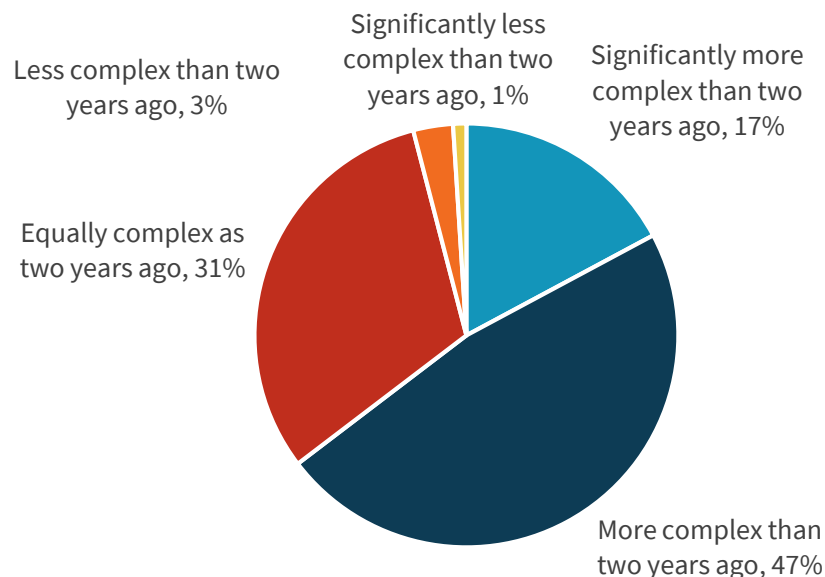
In this Technical Review, ESG examines Pure FlashArray File Services with a goal of validating the ability of the Purity//FA operating system to provide consolidated storage for blocks and files from a shared storage pool with global deduplication and compression. ESG tested Purity's ability to run file workloads and block applications simultaneously from the same system.

The Challenges

IT is still a major challenge for many organizations. Nearly two-thirds of respondents (64%) to a recent ESG survey reveal that IT is more complex compared with two years ago (see Figure 1).¹ When asked what was driving more complexity, storage and data access factors figured prominently in the responses, with higher data volumes (37%), the increase in the number and type of endpoint devices (26%), more users (21%), and too many different vendors (15%) all making the list.

Figure 1. IT Complexity

In general, how complex is your organization's IT environment relative to two years ago?
(Percent of respondents, N=658)



Source: Enterprise Strategy Group

In addition, the top two most cited challenges associated with on-premises storage infrastructure are the same as they were in previously conducted ESG research.² Specifically, the data reveals some commonality in challenges across both

¹ Source: ESG Research Report, [2020 Technology Spending Intentions Survey](#), February 2020.

² Source: ESG Research Report, [Data Storage Trends in an Increasingly Hybrid Cloud World](#), March 2020.

block and file environments. The overarching issue that drives data storage concerns is relatively unchanged—data growth continues to accelerate, and the resulting infrastructure required to store and protect that data is costly and complex. A solution that can simplify and unify the storage environment while providing high availability, consistent management, and data protection tools is needed.

The Solution: Pure Storage FlashArray File Services

Purity File Services is available with the latest Purity upgrade. It provides native file storage and access for FlashArrays (FA), integrating SMB and NFS protocols for multi-protocol access and a native file system into the Purity//FA operating system. This is a significant improvement over simply placing a file server in front of a storage array. Features like snapshots, performance management, and quotas are all maintained at the directory level and fully integrated. Pure’s goal is to ensure a consistent user experience for blocks and files wherever possible, with file-specific concepts and features integrated in a logical way.

By integrating the file protocols into the existing Purity stack, Pure gives organizations the benefit of the same set of data services they already use for block storage across a single shared storage pool (see Figure 2).

Figure 2. Purity//FlashArray Features

Protocols:	Block	File	
	NVMe-oF, FC, iSCSI, VVol	SMB, NFS	
Presentation:	Volumes	File System	
Data Services:	Deduplication Compression Thin Provisioning	High Availability Non-disruptive Upgrades RAID-HA	Snaps Clones (2021) Replication (2021)
	Data Reduction	Data Assurance	Data Protection

Source: Enterprise Strategy Group

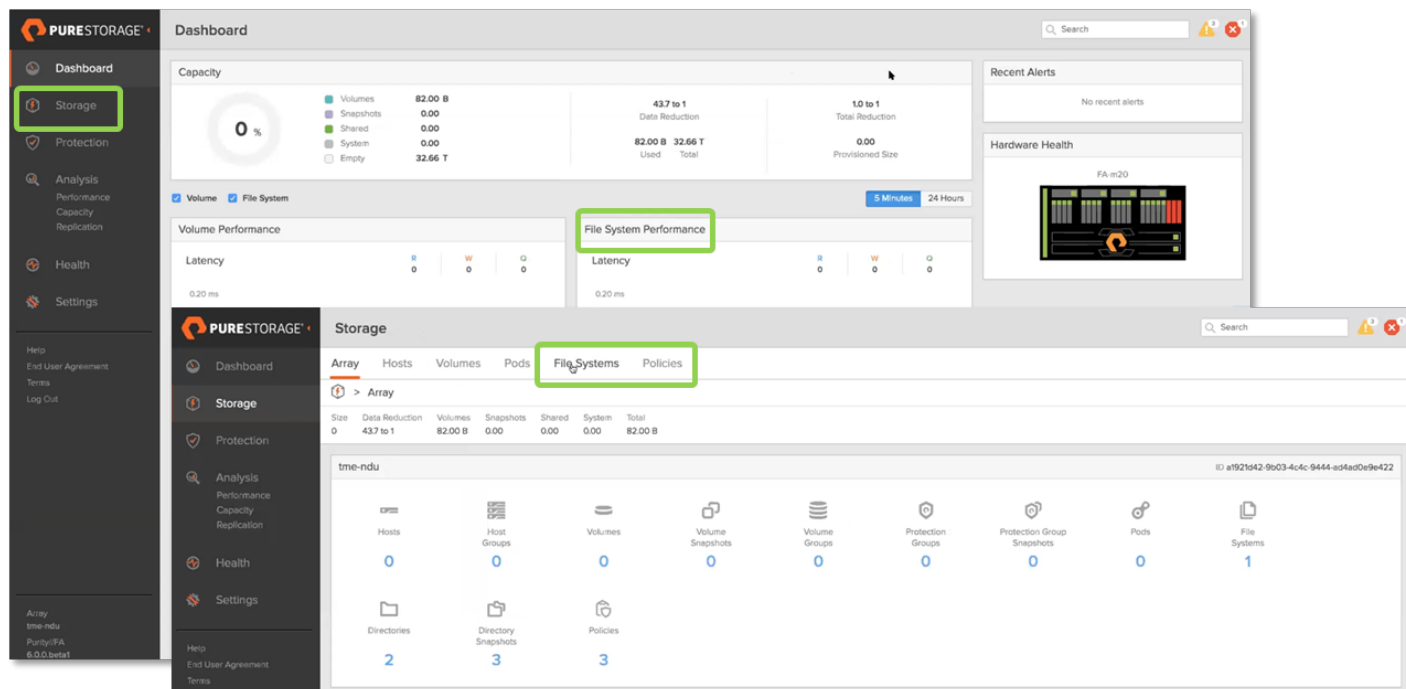
Pure has also integrated file services into the GUI, the command line interface, and the REST API. This enables administrators to leverage the familiar Purity interface and tools to manage file systems and directories. The initial release of FlashArray File Services supports multi-protocol user file access, single-domain Active Directory with trusts, snapshot schedules, and retention policies. Additional features are planned in subsequent releases, including but not limited to application-level file access, VLAN tagging, directory quotas, antivirus, multi-domain Active Directory, replication, and clones.

ESG Tested

Testing was conducted using a prerelease build of Purity FA//6 running on a FlashArray//M20.³ ESG’s goal was to test user file access using both SMB and NFS protocols. First, ESG logged in to Purity and looked at the dashboard. The layout is Pure’s familiar interface with just a couple of additions. File system performance is now displayed on the dashboard alongside volume performance. We clicked through to the storage menu. As seen in Figure 3, two new tabs in the storage menu, *File Systems* and *Policies*, are used to create and manage file systems, directories, and snapshots.

³ At release, FlashArray File Services are supported on FlashArray//C systems. We obtained permission to test on an earlier model.

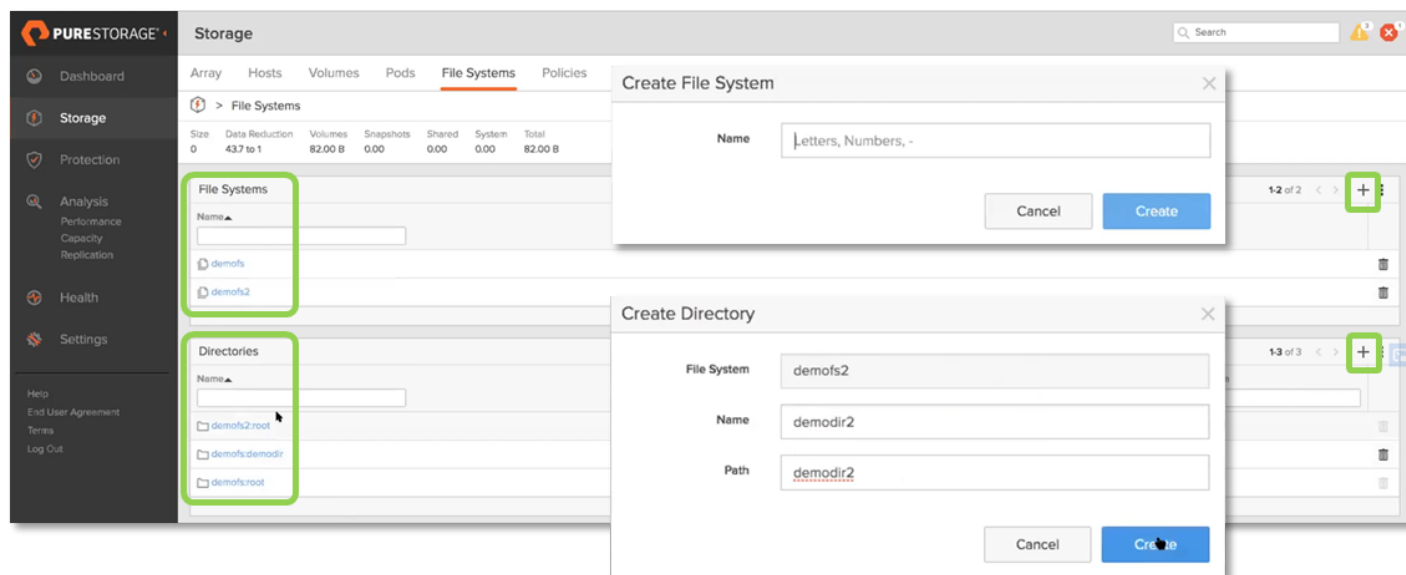
Figure 3. The Purity Dashboard



Source: Enterprise Strategy Group

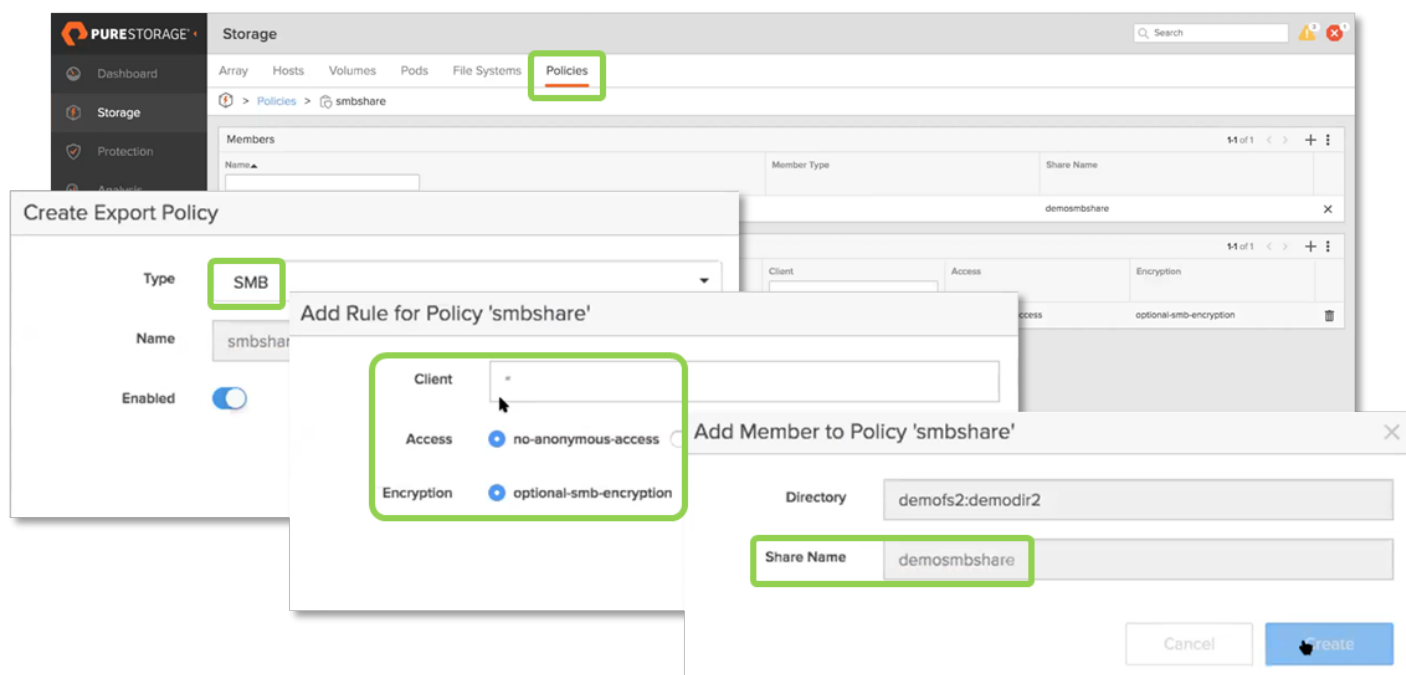
We clicked on *File Systems* and the system displayed existing file systems and directories. To create a new file system or directory inside a file system, we clicked the plus sign on the right side of the screen. Creating a file system required nothing more than assigning a name to it. Creating a directory in a file system was just as simple: We selected the file system, named the directory, and specified the path.

Figure 4. Creating File Systems and Directories



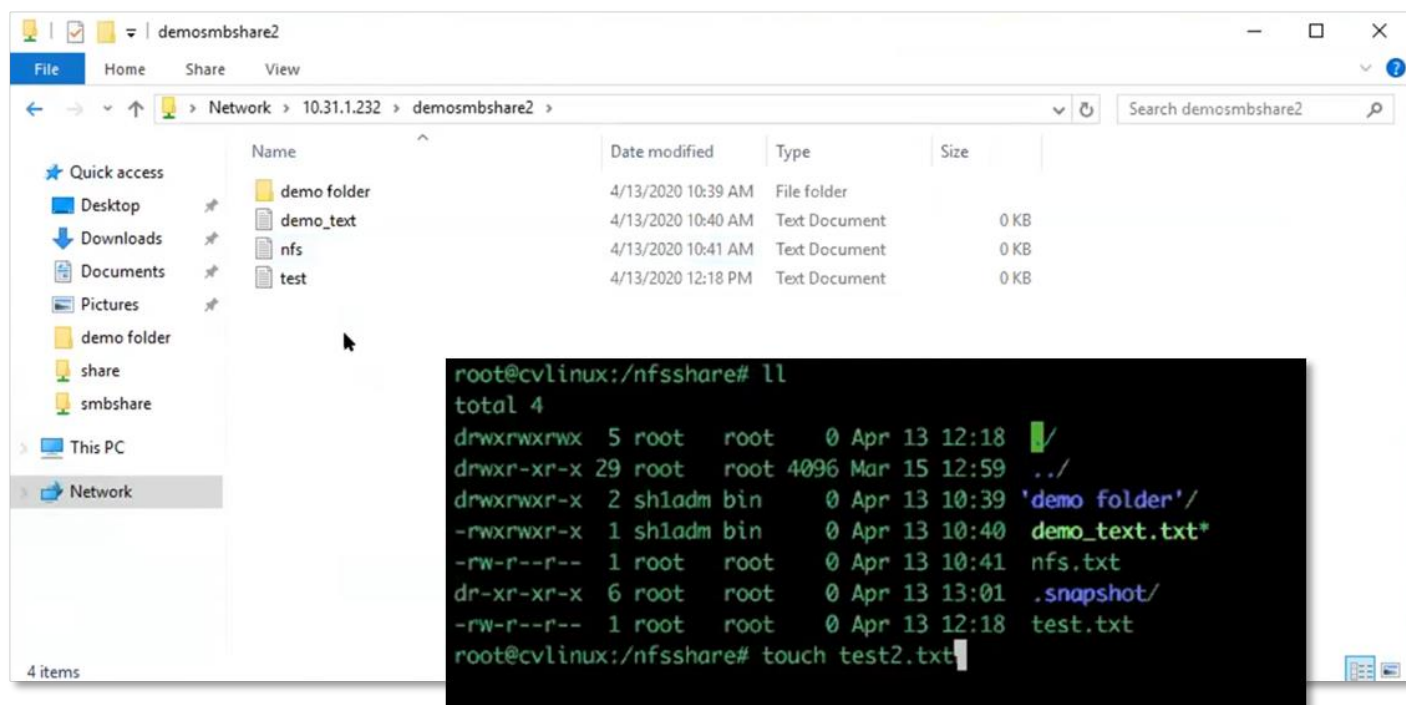
Source: Enterprise Strategy Group

Next, we created an SMB share (see Figure 5). Creating a share takes just three actions: Creating an export policy, setting access control and protocol-specific rules for the policy, then adding a share to the policy as a member. Multiple shares can be assigned to a given policy. After creating the SMB share, we created an NFS share for the same directory.

Figure 5. Creating a Share

Source: Enterprise Strategy Group

We accessed the SMB share from a Windows 10 client and the NFS share from a Linux client, as seen in Figure 6.

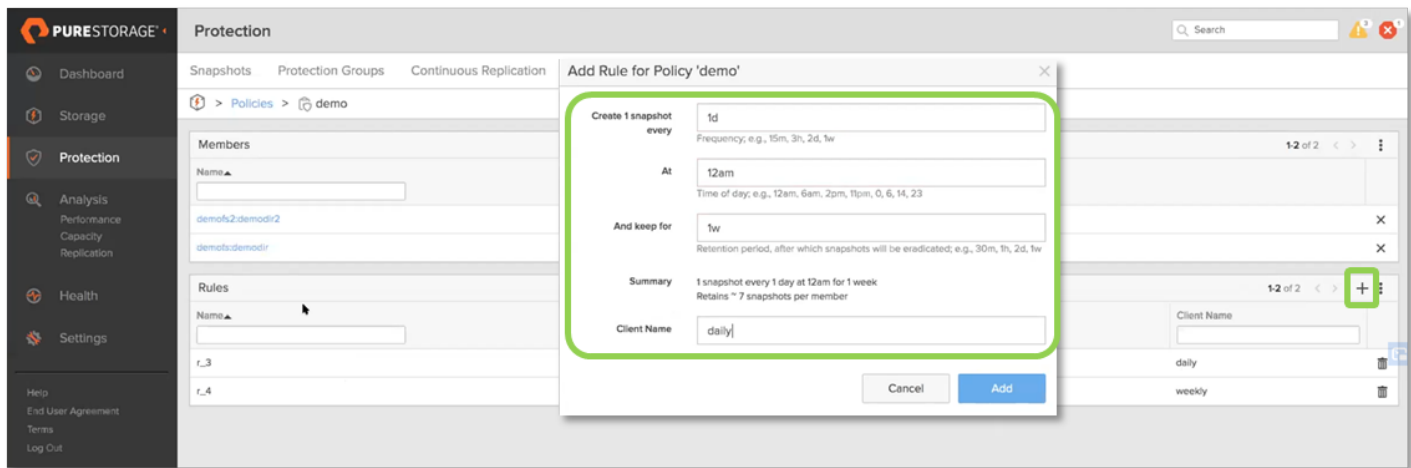
Figure 6. Multi-protocol Access

Source: Enterprise Strategy Group

The same files were visible, accessible, and writable from both clients. Finally, we created a snapshot schedule for the share. Clicking on *Protection* opened the protection menu, and again, it is the same familiar screen Pure users know, with one addition, *Policies*. We created a policy called demo, then added rules and members.

Rule creation is how snapshots are scheduled. It is simple but powerful, allowing for multiple rules to create layered snapshot schedules with different frequencies and retention periods.

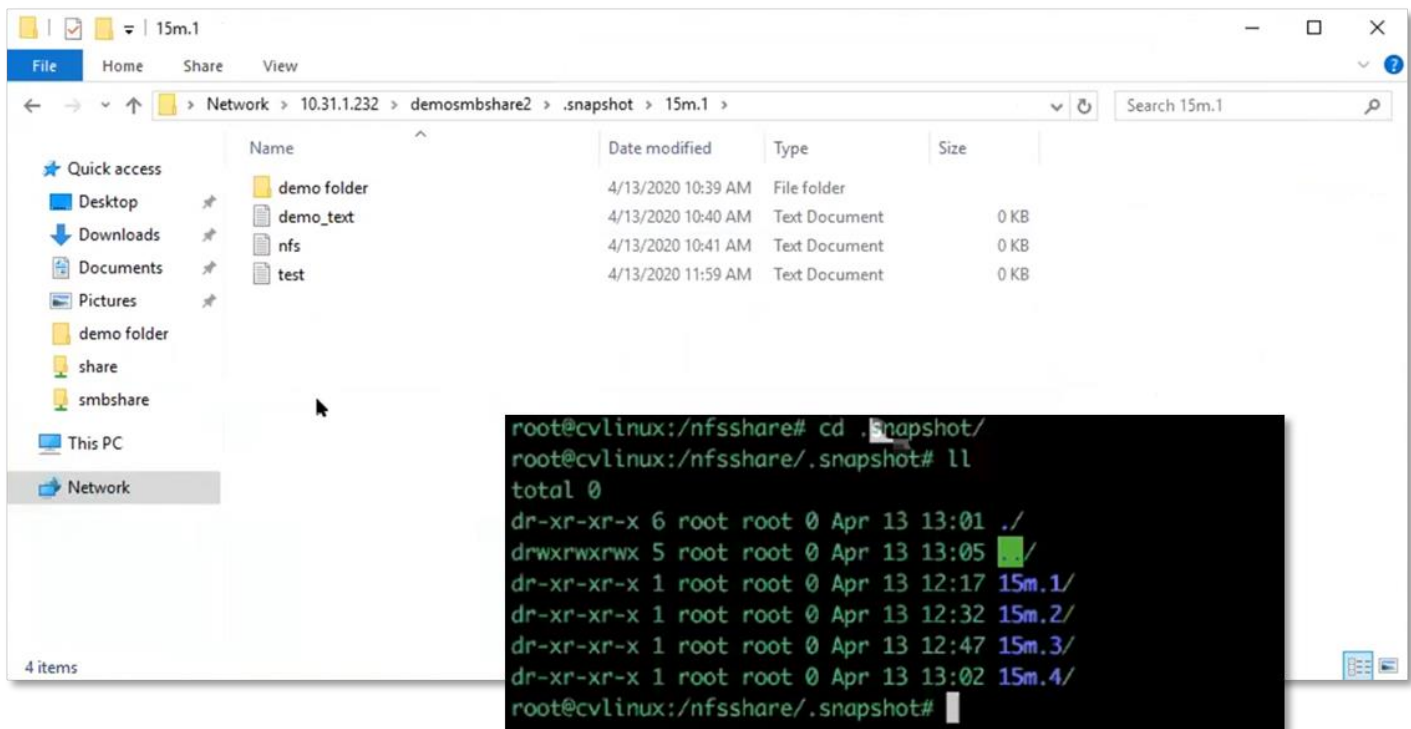
Figure 7. Creating a Snapshot Rule



Source: Enterprise Strategy Group

Snapshots are identifiable to clients by their client name, designated as *daily* in this example. Again, we accessed the SMB share from a Windows 10 client and the NFS share from a Linux client. Snapshots were accessible on both clients in the *.snapshot* directory.

Figure 8. Accessing Snapshots



Source: Enterprise Strategy Group

In this example, snaps were taken every 15 minutes. The naming convention uses the client name defined at rule creation with a trailing number to indicate the snapshot's position in the sequence. We deleted a file from the live directory on each client and restored the deleted files from the other client.



Why This Matters

In a dynamic IT environment, the ability to quickly provision and manage data services is crucial for enabling IT administrators to meet the demands of the business. To meet these demands, IT needs flexible, easy-to-use tools that enable efficient provisioning and management with minimal effort. This is especially true in environments containing both block and file storage, where clients are accessing storage with mixed protocols.

By leveraging Pure Storage FlashArray File Services, organizations gain peace of mind that they can provision block and file storage from the same shared pool simultaneously using the same tool. Organizations gain the benefit of centralized, unified storage management for both blocks and files.

The Bigger Truth

What do current on-premises environments look like from a data storage perspective? Survey respondents were asked to identify the on-premises storage technologies presently deployed in their data center(s). Given the prevalence of corporate files and other unstructured data, it is not surprising that nearly two-thirds (63%) of organizations report still leveraging NAS solutions to some extent.⁴

Combine this with on-premises storage challenges like data growth, hardware costs, staffing costs, and lengthy storage provisioning times, and general IT challenges like managing too many vendors, and it spells trouble. Managing file services separately from block can lead to storage inefficiencies and increased burden on IT, who must master multiple tools and manage multiple pools of storage.

What's needed is a unified block and file solution that can provide storage that is highly performant, simple to deploy and manage, and exceptionally reliable. ESG leveraged Pure FlashArray File Services to create native, multi-protocol file systems from a common pool of storage in seconds and craft a complex snapshot schedule for multiple users in one step.

ESG believes that extending FlashArray File Services to support more advanced capabilities like multi-domain Active Directory, replication, and clones would be a welcome enhancement.

In a dynamic IT environment, the ability to quickly provision and manage block and file data services is crucial for enabling IT administrators to meet the demands of their users and the business. Pure storage has a proven record of providing simple, cost-effective enterprise storage with the performance, data management, and data protection features organizations need. Purity FlashArray File Services extends that paradigm to the world of files.

If your organization is looking to streamline IT infrastructure and provide consolidated block and file storage services, ESG believes that you should consider Pure FlashArray File Services.

⁴ Source: ESG Research Report, [Data Storage Trends in an Increasingly Hybrid Cloud World](#), March 2020.

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