



## FILE SERVING – GETTING BACK TO THE USER EXPERIENCE

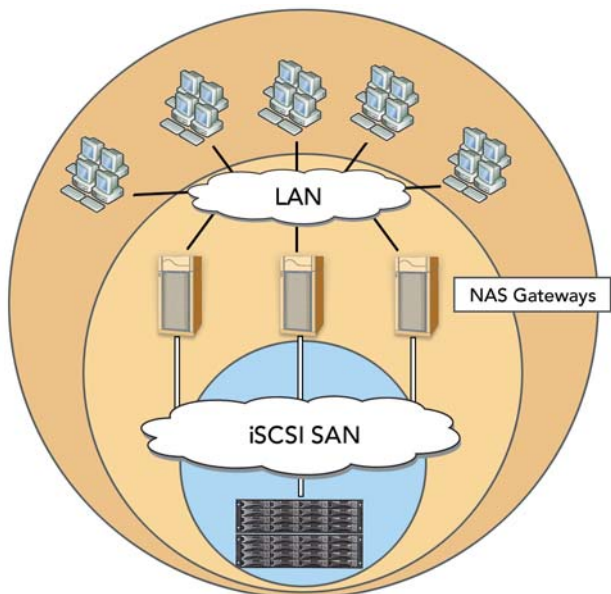
Supporting the same NAS protocol doesn't make file serving storage solutions the same. Because file serving is end-user focused, the best solution is the one that provides the right user functionality.

Discussions of file serving solutions are often simplified to whether the storage device supports CIFS or NFS. This leaves out any discussion of the user experience – an unfortunate omission, since file serving solutions differ in end-user features and operations. Let's look at how a user focus can drive better file serving implementations.

### 1. VENDORS OFTEN IGNORE THE USER AND PUSH THE PROTOCOL

Imagine that you drive a 4-wheel-drive truck and your neighbor drives a 2-wheel-drive car. Both have four tires, a steering wheel, and are powered by gasoline – but does that make them the same? Few would argue that they are equal, because the user experience is quite different.

The same goes for file serving storage. Some vendors suggest that since Vendor X sells a product that supports a NAS protocol and so does Vendor Y, they must be the same. But are they? Does supporting a particular NAS protocol equalize NAS features any more than being powered by gasoline equalizes vehicles? Similarly, some storage vendors claim they are better because they support more protocols – for example, both CIFS and NFS for NAS. This product may be the best – but if so, it's because it provides better functionality, not because support for more protocols is inherently better. All-in-one solutions can be a "jack of all trades and master of none," providing multiple mediocre features instead of a single good one.



Reducing storage benefits to protocol support ignores the most pertinent differentiator – user experience. The key factor in file serving is what services the user gets. NAS servers providing CIFS are not identical – for example, features such as security, management, data replication, "single instance storage," "restore previous versions," or "offline folder synchronization" work in Microsoft NAS environments (CIFS) but not in other CIFS implementations. Focusing only on the protocol results in equating all products that support it, instead of matching specific functionality to user needs.

## 2. NAS GATEWAYS MAXIMIZE FILE SERVING BENEFITS AND IT BEST PRACTICES

Because file serving has an allegiance to the user and the client operating system, it can be much more effectively implemented as a gateway utilizing SAN storage. Gateway advantages include greater flexibility, scalability, and virtualization. You can deploy combined or separate CIFS and NFS gateways to offer better file services for each user; in addition, to upgrade or scale a specific protocol you don't need to disrupt your core infrastructure.

The standard "onion layers" analogy demonstrates the point (see graphic). Consolidated SAN storage is at the center and provides Ethernet connectivity and iSCSI; an outer layer provides application services such as e-mail, databases, and file and print. All of these user applications come in various flavors, such as Exchange or Lotus Notes for e-mail, Oracle, SQL Server, or MySQL for databases, and Windows (CIFS) or Linux (NFS) for file serving.

But what happens when the next version of the CIFS or NFS protocol is available? If NAS is implemented on an outer layer, adding or upgrading minimizes impact on your infrastructure. There is no disruption to the rest of your architecture, and you can upgrade incrementally as needed. But if NAS is built into your core storage infrastructure, a CIFS or NFS upgrade requires you to disrupt the core to add services – services that may not be broadly needed. Some vendors call that better integration, but the reality is that you lose flexibility and make upgrades more difficult.

With NAS embedded in your SAN, scaling is also more problematic. Now, not only will you need to upgrade your

SAN to increase the capacity, performance, and protection of data, but you'll have to upgrade the SAN whenever you need additional file server resources or maintenance fixes as well. For many SANs, these are forklift upgrades that disrupt operations throughout the data center. (See Coffee Break, "Breaking Free of the Hardware Lifecycle")

In contrast, when you implement a NAS gateway for file serving, you gain the advantages of an independent upgrade strategy, a real scale-out strategy (if you need more file serving, simply add more gateways), and the ability to match gateways to user preferences. Equally important, gateways can be deployed in a variety of methods, including server virtualization.

For file serving, SAN storage with NAS gateways offers the most flexibility and scalability as well as enabling virtualization and minimizing infrastructure disruption.

When file serving resides in an outer layer, it can be virtualized like any other workload,

adding to your scale-out and information sharing options. Virtualization of file servers is key for cost-efficient deployment – but it is impossible when NAS is embedded in the SAN.

To summarize, when you are looking for file serving solutions, don't let the NAS protocol conversation replace a thorough investigation of end-user-focused features. All file serving solutions are not the same. Using a NAS gateway affords you more choice and flexibility, simpler upgrades, and scaling (and the option for incremental upgrades), and less disruption to the core of your infrastructure.



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