NAS at a Glance

What is NAS?

Network Attached Storage is dedicated hard disk-based storage technology designed to be connected directly to a computer network, providing centralized data access to multiple network clients.

What are the benefits of NAS?

Data availability increases with NAS because it is specifically designed to intelligently store and serve files to multiple clients. Unlike basic storage devices such as USB, Firewire or CD's/DVD's, which have limited functionality, NAS includes an embedded Operating System. The OS gives NAS built-in intelligence and allows it to operate independently of the servers and clients on the network. If any of the other machines go down, the data remains secure and accessible. Additionally, NAS can include RAID, which replicates the data as it is stored across multiple disks to provide easier data recovery in the face of hardware failure.

Why NAS instead of a server?

For dedicated storage and file serving, NAS is both less expensive and less complicated than a traditional server. Traditional file servers, of course, still have their place. If you need general server capabilities -- applications, services or daemons, and hardware peripherals -- in addition to storage and file serving, then perhaps a traditional server is the choice for you. NAS dedicates itself to its primary job. By stripping out those other capabilities, a NAS device becomes less prone to system crashes and security attacks. Also, generally speaking, when there is a problem, a NAS system can be trouble-shot much faster due to is lower level of complexity.

Do NAS devices work across multiple platforms?

Absolutely. In fact, NAS devices achieve more client Operating System independence than servers by hiding their OS personality. They do run their own Operating Systems, but unlike Windows, UNIX and Novell file servers, they don't demand specific client-side protocol support.

What is RAID?

RAID stands for Redundant Array of Independent Disks. RAID arrays allow multiple individual hard disks to be combined to perform as if they were one larger disk, and the effect is to spread and replicate the data across multiple disks. That, in turn, reduces the risk of losing all data if one drive fails.

Why do I need RAID?

We all know that we should be backing up our data, but the reality is that we don't do it as religiously as we need to. And even if you are a backup maniac, RAID can still give you added insurance that your data is safe from hardware failure. Depending on the level of RAID you are running (at least RAID 1), one drive can fail and your data is still recoverable. If you are using a single drive without RAID, and failure occurs, your data is gone.

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Why NAS instead of DAS?

Direct Attached Storage (DAS), such as USB and Firewire drives, also has its place, but it is not as versatile as NAS. DAS is directly attached to one host computer and cannot be directly and simultaneously accessed by any other clients. A DAS device is completely reliant on the host computer, hence, DAS can be an effective option for an individual computer user, but difficult to manage for multiple users. Additionally, most DAS options do not include the data protection of RAID. For multiple computers or networks, NAS is more efficient, safer, and easier to manage.

How are NAS and SAN different?

This is constantly debated. The short answer is that NAS grew out of the concept of file servers as a service to manage files for clients on a network. With a file server in front, large amounts of storage could be hung from the server and served to users on a file-by-file basis. Management and backup of that data could be centralized off the server.

Storage Area Networks (SAN) on the other hand, grew out of the concept of taking storage devices and storage-heavy traffic and creating a separate back-end network designed specifically for that type of traffic. They are self-contained on private LANs, well-suited for moving large amounts of data; whereas NAS is connected directly to the existing public LAN and can be harder on network throughput.

These fundamental differences lead to differences in scalability, complexity, availability and performance. In most cases, NAS is less expensive to purchase and less complex to operate than a SAN. However, a SAN can provide better performance and a larger range of configuration options.

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