

STORAGE SWITZERLAND

SMB NAS REQUIREMENTS: STORE, PROTECT AND COLLABORATE



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A small business has typically less than 25 employees. From an IT perspective many of the employees use laptops and count on computer-based applications to get much of their work done, in most cases, an office productivity suite. What was traditionally a core application in the business, like an accounting package, is now hosted online. This means that for most SMBs the first “server” they buy is a file server in the form of a network attached storage (NAS) system.

In the small business the NAS system has to do more than just serve files. It needs to be more of a small office storage server. It has to store, protect and enable collaboration. But the challenge is that manufacturers have flooded the market with NAS devices that range in form and function, varying significantly in upgradability, protection and feature set. Below are some of the key requirements that the SMB should demand from a NAS system.

A storage system like this has the ability to pay for itself not only by making users more productive and protecting corporate data assets but also in hard dollars. These systems can replace multiple Windows® file servers and

eliminate the need for the client access licenses that operating systems vendors charge for.

Twenty five client access licenses can be as much as \$3,500. And that doesn't include the cost of the server, the storage capacity to perform the function or the capabilities to protect and enable collaboration.

The Prerequisite - Ease of Use

SMBs don't have the luxury of a dedicated IT staff like larger organizations. Instead they typically count on the services of independent consultants to help them with their IT challenges. As a result the SMB is often "on their own" when it comes to product support. So the SMB NAS has to be easy to connect, configure and work with, day in and day out.

NAS devices like the [Western Digital®'s WD Sentinel™ DX4000](#) are ideal examples of solutions that are designed to be plugged into an existing network, powered on and immediately accessible to the staff. All that remains is to create users and the system is ready for use.

Requirement #1: Store

An obvious first need of a NAS is to store data so that all stakeholders can easily access and collaborate. Typically in a small business environment, users create data that is stored on the hard drives in their laptops or desktops. While this approach works for some, it can create silos of data across multiple devices in the network. To further add to the issue, there often is confusion about where the latest and greatest version is located when this data needs to be shared. Thus the NAS becomes the ideal place to store all critical business data. The need for a NAS as a centralized shared storage will increase as solid state drives, typically available in much smaller storage capacity, become more commonplace in user laptops. While these drives provide excellent performance there is only enough capacity on them to store a working set of data.

The storage for the NAS needs to be flexible to meet the growth needs of the SMB, and upgrades should be easy to perform. Ideally the system should start with a minimum of two hard drives (mirrored for protection) and then expand as capacity demands require. As part of that expansion though, many users will want to switch from mirrored protection to RAID 5, to increase available capacity. This can be a complex conversion for some NAS systems, involving a complete re-format and reloading of data. An SMB NAS should handle this conversion automatically without having to reload information. Growth should not come at the expense of a days' worth of downtime.

Requirement #2: Protect

Protection is a multi-layered process that can often leave the SMB "dazed and confused". There are client laptops and desktops to protect, there is data on the NAS to protect and there is the need to make sure that the NAS remains as available as possible, through power supply or hard disk failures.

A common second use for a NAS device will be as a backup for data being stored on local laptops and desktops. Ideally the NAS should come with the software that will backup and protect at least the basic "my documents"

directories of those users. More advanced solutions, like the Western Digital's WD Sentinel DX4000, provide an incremental data protection capability, which can protect the entire laptop or desktop while consuming a minimal amount of storage by backing up only the changed or new information. This allows for basic recovery and full system recovery, in the event of a complete system failure or a stolen laptop.

As the confidence in the NAS grows, and users begin to use it to share data with other users, it will begin to not only store backup data but also have unique data on it. Files will be created, modified and finalized without ever leaving the NAS.

Storing unique data means that the SMB NAS must have similar availability features to its enterprise brethren, since it may store the only copy of a file. "Availability" means making sure that in the event of a physical hardware failure the NAS can still provide file services while the failed component is replaced. It also means that failure of a single component does not mean waiting for the unit to be repaired and all the data restored. Again, in today's world, an SMB, just like an enterprise, can't afford to be down for hours or days without access to its data, while a full recovery is completed.

The first step in availability is redundancy. A key requirement for the SMB NAS is to have a data protection scheme, like mirrored or RAID-protected hard drives. With these protection schemes, if a drive fails, the remaining drives can still serve up data. Flexibility is important here as well. As discussed earlier, as the capacity demand grows the NAS should also have the ability to change from a mirrored configuration to a RAID 5 configuration.

Many SMB NAS systems provide some form of drive protection like RAID, but often stop there. As the users develop confidence in the NAS, it's relied on more and more to store unique copies of data, instead of just backups. In these cases protection from more than just a drive failure is required. And there are other components that should at least have the option of redundant protection.

Ethernet interfaces, for example, can fail, so having multiple ports should be a requirement. Users should also look for NAS systems that can support redundant power supplies. Again, while component failures like this are rare, they do occur and having a second power supply keeps file services available to the users that have come to expect them.

A final availability addition that's often forgotten, is the use of an Uninterrupted Power Supply (UPS) in conjunction with the NAS. External power loss is probably the most common of "disasters" in an SMB. A sudden disruption of power to a NAS can cause data loss, data corruption or even NAS operating system corruption. At an extreme, the result may be a reloading of the SMB NAS's operating system.

A UPS is an inexpensive solution that most SMB NAS systems don't take advantage of. In the event of power loss almost all UPSs will attempt to signal the attached hosts, typically through a USB cable, that power is out and the server should initiate a 'graceful' shutdown sequence so that no data is lost or corrupted. Considering that most SMBs are laptop based and SMB networking equipment has relatively low power draw, sustaining the entire network while documents are saved can be accomplished with relatively small UPS.

The final leg of the availability and protection tool is protecting the data on the SMB NAS against the unlikely event that the business's location becomes unavailable, due to fire, flood or other catastrophe. The SMB NAS should have the ability to provide replication to another device or to an Internet-based storage service. If the SMB has more than one location, replicating changed information between NAS devices can be a cost effective solution. But if the SMB has only one location a key requirement for the SMB NAS is to replicate data to an offsite storage facility such as a public cloud storage.

Requirement #3: Collaboration

The NAS by itself enables collaboration by providing a central location for storing business data and other user files. It's this use case that becomes the main driver for the storage and protection requirements listed above. Beyond that, a capability that's often lacking in the SMB NAS is providing remote access to files stored on the device. This is one of the key reasons that users feel the need to keep all their data with them and not on a remote file server. Providing remote access will further encourage use of the device and reduce the cost of buying user systems with large hard drives.

If the SMB wants to get more for their investment dollar than just using the NAS for backups, remote access has to be a key requirement. SMB NAS solutions like Western Digital's WD Sentinel DX4000 have the ability to provide users, remote employees and trusted partners with remote access to files without the use of complicated and expensive virtual private network (VPN) software. This capability significantly increases user productivity through easier collaboration that will ultimately increase the ROI of the SMB NAS.

Summary

The SMB is inundated with choices when considering a NAS solution. While many of the choices look good on paper or may be inexpensive, they lack functionality or integrity in real-world applications or use. By focusing on the key requirements to flexibly store, reliably protect and broadly collaborate, the SMB can eliminate many of the available devices from consideration. This will allow the SMB to make a wiser decision against a smaller qualified selection pool.

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