



## Buyer's Guide Series – How to Choose Storage

### The incessant need for Storage

Data and Information trends clearly point to a rising demand for more storage, this has not changed over the last few decades, but the convergence of technology has escalated and 'Smart' storage solutions have lagged behind, the proliferation of Internet broadband connections to the masses is escalating the demand for storage as consumer demands for digital multimedia, such as music, digital home videos, movies and still images continues unabated. The PC hard drive is usually the only storage in the homes, and most home users do not use any form of back up to ensure integrity. Imagine losing the precious family photographs that can often be more valuable than the PC's they are stored on.



Price sensitive solutions based on external hard disk drives have limited or no file sharing /networking capabilities. It's no longer plausible to provide a solution that has to be transported from system to system to enable facilitation of storage. These stand-alone storage solutions are two a penny and have a very low value for money ratio, as stagnation occurs swiftly with little or no upgrade path to resolve storage bottlenecks. This is very clear if you consider what may happen when one of them fails to boot up one morning, a common occurrence for storage in this class. They are not known for their reliability and manufacturers use the USB option to install hard disk drives that are rejected during the manufacturer level and downgraded to a lower capacity for use in non-critical environments. This may sound familiar to those of you who have had USB units go down on them with loss of data.

Network Attached Storage (NAS) products have come a long way in the last four years or so from merely being an information data storage server, they have converged to serve as all in one servers for data, audio and media based applications. Many of the systems have features that make enterprise level NAS appliances look slipshod.

The insatiable need to store information has led to a plethora of solutions being offered by many vendors. Having a clear and concise understanding of factors that determine the need to have a NAS will help towards formulating a final shortlist of which NAS to buy.

### Factors to determine Which NAS

Potential Network Attached Storage buyers may find it daunting to make a decision based only on marketing factors in consideration for which NAS may be the correct fit for their requirements.

Considerable thought needs to be given to factors such as features, performance, price, service and, upgradeability to mention just a few. Now, more than ever, it is easy to get lost in the "hype", so to avoid regrets later, we have provided a suggestive list of factors that may assist to determine the final outcome of which NAS to purchase based on your specific need analysis.



### **Consider long term (and not short term) needs.**

Storage requirements continue to grow at an unprecedented rate with some estimates seeing a doubling in storage needs every 12-18 months. The rapid growth in the amount of data to be stored needs to be taken into account to accommodate these growing needs over a number of years. One of the most critical aspects is to explore potential upgrade paths, and to consider how future upgrades will impact on the performance and overall cost of the NAS device.

### **Consider Protection Methods.**

It is simplistic to think it is only a matter of dropping data onto disk and not being concerned about anything else. No storage device is that simple. Almost all NAS devices offer redundancy using RAID protocol as a standard. RAID (Redundant Array of Independent Drives or Disks), also known as (Redundant Array of Inexpensive Drives or Disks), along with Snapshot and Replication technologies are therefore common features of any quality NAS device. If the intention is to use RAID and also to utilize Snapshot within the NAS device, it will have a tremendous impact on the overall storage capacity. On the other hand, if wishing to take Snapshots or replicate data outside of the NAS, then adequate extra storage must be considered to support those procedures.

### **Consider offered features.**

Careful consideration should be given to the required set of features that will meet exacting needs, as well as allow for future growth based on the long term needs that have been considered.

It will be far too easy to select features that may not be utilized and in one way or another compromise the return on investment and value for money ratios.

Whether the need is for home or business use, many of the NAS devices offer a combination of features that will perform adequately in both environments. Other NAS devices are specifically designed for business use and these may not have the desired effect for home use. The combination NAS devices are designed from the ground up to act as both home and business NAS devices.

### **Consider the impact on the current infrastructure**

Once a NAS device is installed, and in use, it will inevitably result in increased traffic on the network segment. This leads to complaints of a slowing down of the NAS device, and performance bottle-necks within the segment. It is essential therefore to understand the implications of increased traffic, and to make allowance for any future upgrades or infrastructure changes that may be required. A typical scenario would be that having added a NAS device to a lightly used network segment, there would be a necessity to upgrade from 100Mbps Ethernet to 1Gbps or 100Gbps in an active environment. The need to upgrade becomes more obvious in a wireless environment, where the loss of performance, from the protocol aspect, necessitates a mandatory upgrade.

### **Business Case for NAS**

Some of the most important factors for considering a NAS device for business must comprise of the ability to balance the correct redundancy level with the value and criticality of data and information that requires storing. This will drive the features and in turn establish the type of NAS eventually selected.

The criticality of data is further accentuated by deploying a hierarchal information storage policy that will drive recovery of data at times when disasters strike.

### **TIER 1 – HIGH (Critical)**

Tier 1 classification is high priority critical path data that requires access at all times, with a high level of redundancy. Some of the factors that need consideration for achieving this are:

**PERFORMANCE** – Ensure the number of users wishing to access the NAS device will be supported and the current installed network backbone will not suffer degradation in performance as a result. Please note this is a NAS (Network Attached Storage) and not a DAS (Direct Attached Storage) system. Performance of the NAS will be significantly determined by the network infrastructure as well as the deployment strategy for storage of data.

**FEATURES** – Enterprise Class features supporting a superior array of RAID levels to provide the necessary redundancy required, as well as allowing for backup to another external device. Scheduled backup services supported via firmware features should facilitate features such as; snapshot, remote replication, iSCSI and a host of other features that allow a safe and sound platform for data redundancy.

**EXPANDIBILITY** – An ambiguous term that implies the ability to change the original product form factor, to one that adapts to a changing business environment. Adding capacity, adding more memory and maybe some NAS systems may allow change of processor. All these are risk based upgrades that may nullify manufacturer warranty, if not performed by an authorized reseller. Aside from this no other upgrades are really possible on a NAS platform. Our advice add a secondary unit that allows replication and/or is stackable that way you are adding a tremendous capacity for extra storage, an increase in performance that may equate to having a dual processor and of course with a second unit a memory upgrade becomes insignificant. A secondary unit can also be used for converging to TEIR 2 and hence the need to upgrade for TEIR 1 solution becomes superfluous.

**RELIABILITY and WARRANTY** – Purchasing a unit with a strong historical hardware and software reliability track record is key factor as is a substantial warranty period, and strong vendor support. These factors may be paramount if a zero tolerance for downtime is a mandatory requirement.

**REPLICATION** – The ability to replicate either locally or remotely must be supported. This as a single feature is increasingly becoming one of the most important factors for ensuring a sound strategy for disaster recovery in times of disaster. Look closely and ensure the feature is standard and not one that requires complicated installation procedures. A must have on your short-list.

## **TIER 2 – MEDIUM (30 days or older)**

Tier 2 classification is for data that has exceeded the 30 day rule and does not require being on tap, and can be retrieved as and when required. Any cost effective NAS device that supports multiple volumes and support for backing up to a USB devices will meet this criteria. Some of the factors that need to be considered to achieve this are:

**PERFORMANCE** – Medium performance, allowing for timely data transfer from TIER 1 device.

**FEATURES** – Enterprise Class features supporting a superior array of RAID levels to provide the necessary redundancy required, as well as allowing for backup to another external device. Scheduled backup services supported via firmware features should facilitate features such

as; snapshot, remote replication, iSCSI and a host of other features that allow a safe and sound platform for data redundancy.

**RELIABILITY and WARRANTY** – Purchasing a unit with a strong historical hardware and software reliability track record is key factor as is a substantial warranty period, and strong vendor support. These factors may be paramount if a zero tolerance for downtime is a mandatory requirement.

### **TIER 3 – ARCHIVE (90 days or older)**

Tier 3 classification is for data that has exceeded the 90 day rule and requires to be archived. The solution used in this policy stage can be either Tape based or keeping with disk drives and merely archiving to drives and once they are full, purchasing new drives to continue building a library of archived drives. Another alternative would be to deploy a DVD back up type solution to ensure archiving is carried out at timely intervals.

### **NAS for Home**

The network attached storage (NAS) devices have undergone two major shifts.

First, the cost of ownership for a NAS in the home has dropped significantly. The pricing of both the NAS devices as well the hard disk drives have fallen to be attractive enough for many home users. Second, the manufacturers are enticing users with sleeker and featured packed designs fronted with user-friendly interfaces. It is a win, win for buyers.



After all, it is not just businesses that require data and critical information to be protected, at home many of us have irreplaceable digital memories stored and shudder to even think what may happen if these disappear as a result of no protection.

The ideal Home NAS will have features that complement using it for both Home and Business. We earlier touched upon combination NAS devices, that converge home and business needs into one solution. Our analysis will focus on these combined NAS devices, with features packed to brim. A guide to the must have features for your next NAS:

**MEDIA** – We require the ability to not just store data but use our NAS device as multimedia hubs so as to be able to stream files to other devices, whether they be photos, audio or even movies. The key enabler to allow us to stream across the network is to be able to look at the 'NAS' on the network. UPnP is a standard that allows us to be able to look at our

NAS on the network and for other devices supporting the standard to communicate with it easily. The key feature of the NAS we are looking for is the support for "UPnP AV", the universal plug-and-play audio/visual standard. This allows the NAS to announce itself to the network as a media streaming device (pictures, music, movies) and any other UPnP AV compatible device to immediately recognize and enable streaming from that device. This then is the first step towards moving to a totally digital connected home.

**RAID** – Whilst it is accepted all NAS systems will have a rudimentary offering of RAID services, we want to ensure the level at which these are offered translate to the best combination of redundancy, performance and value for money ratios. RAID 0, and 1 are a standard offering, RAID 5 must fall into the same category. RAID 6 will be a bonus if available. Support for multiple volumes as well as expansion on the fly without loss of data are essential features and essentially become mandatory.

**RELIABILITY and WARRANTY** – Purchasing a unit that has a strong hardware and software reliability historically will be critical as well as a substantial warranty terms and a responsive vendor support may be critical to ensure little or no downtime.

**UPGRADE FEATURES** – In most instances purchasing a unit that has upgrade capability extends the product usefulness in its entire lifecycle. A fine example of this is to be able to upgrade to larger capacity drives without loss of data as well as migrating to a higher RAID level all without loss of data.

**VENDOR DEPENDABILITY** – Is the vendor you are considering going to be supporting the unit long term or are they in it for the short term? This can be determined by numerous factors, such as determining the historical lifecycle of previous models, the term of warranty offered which may provide a clue as to how long it may be supported. How often does the firmware get upgraded as well as determining the reason for these upgrades by close examination of the revision notes. The vendor's commitment to the level of support they are prepared to offer can also be used as a gauge to determine support for lifecycle.

The factors outlined are merely provided as a guide to help determine the best fit to your requirements. Ultimately any system shortlisted has to be reliable and perform the basic task of providing redundancy for your data. Ultimately, the drives used for integration are very important, after all, the NAS is only as good as the drives used for integration. If the drives fail the type of NAS becomes totally irrelevant. Many resellers pay very little or no respect to the quality level of drives used for integration. In the coming months we will be publishing various reports that will help make this aspect of purchasing a NAS much simpler.