November 26, 2007
RE: High-Rely Systems vs. NAS for Network Backup Solutions.
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WHITE PAPERS

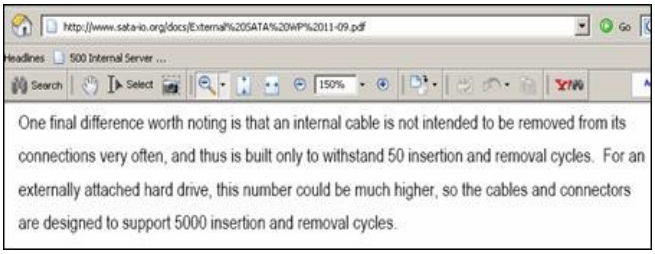
Summary: NAS (Network Attached Storage) has become popular and lately has been used in backup applications. While NAS has some conveniences, it is often not suitable for a network backup solution. This document explains how the High-Rely systems are much better suited for backup and points out the shortcomings of using NAS in this application.

Exposed Drives. Almost all NAS drive trays are open at the top and back of the drive (see photo to the right). Such "Bare" drive designs mean hard drives are exposed to shock, static, moisture, and other environmental problems when removed from the unit for transport off site. High-Rely drives are fully enclosed and supported in aluminum with individual fans. The fact is, NAS boxes are usually designed as local storage, not transportable media. Experts widely acknowledge that *data not transported offsite on a regular basis does not qualify as a "backup"* at all. NAS boxes are simply not designed as true backup solutions.

The typical NAS tray is exposed top, bottom and rear.

Unreliable Connectors. As mentioned above, most NAS designs expose the back of the drive so that the male SATA connector on the drive can mate with its equivalent female socket (or in some cases with a standard SATA cable). According to the SATA-IO Committee specifications, this connector is rated for only 50 plug/unplug cycles. See screenshot below or link to original document at http://www.sata-io.org/docs/External%20SATA%20WP%2011-09.pdf Contrast this with the up to 100,000 plugs and unplugs rating of the High-Rely drive tray and you realize High-Rely drives are designed for the daily rigors of backup.

Note: The High-Rely tray is fully protected.



Slow Backup. Network Attached Storage (NAS) carries the overhead of the network stack (the TCP/IP protocols as well as Ethernet frames). 100Megabit connected NAS boxes top out at around 30GB to 40GB per hour for backup speeds in the real world. High-Rely drives with a Direct Attached Storage (DAS) model outperform most NAS solutions with a 100GB per hour or more backup speed. This is all too critical with today's shrinking backup windows.

Drive Compatibility. Most NAS boxes are based on Linux, which uses a different hard drive format by default than Windows. One of the key features of High-Rely drives is that if the main unit fails, the drives can be removed and plugged into any Windows computer's SATA connector and the data may be accessed directly. This is not the case with NAS configurations, especially those that use drive spanning or redundant configurations (Raid 0 or 5), which have proprietary formats.

Slow Drive Swap. NAS boxes that use large hard drives and Redundant Arrays of Inexpensive Disks (RAID) can take several days to rebuild after removing a drive. Quite a few NAS solutions are not even hot swap; they require you to power down before changing the drives. High-Rely drives are optimized for backup so they remove and reinstall in seconds with the full capacity available immediately.

Design Complexity. NAS appliances require motherboards with processors, RAM, bridge chips, glue logic, and a boot device (Flash RAM or boot hard drive). Each of these components generates heat, uses power, and most importantly, is subject to failure. High-Rely drives are designed for simplicity and have none of these components.

Poor Operating System Compatibility. The newer Windows Operating Systems (Vista and Longhorn server) will not recognize many of today's NAS boxes because they use version 2.0 of Samba. Security that has been added to Windows prevents Samba hard drives from being seen. Specifically, the new Windows defaults to using the NTLMv2 authentication. In order for them to be compatible you must lower the security of Windows by changing registry settings. http://www.linux-watch.com/news/NS4434907782.html

User Number Limitations. Look closely at the specifications of a NAS box and you may discover license limitations that prevent simultaneous access by more than 15 users. High-Rely drives are directly attached and you pay nothing for user licenses.

Poor Recoverability of Data. Because NAS boxes often use RAID and Linux partitioning schemes, the ability to recover data in situations where drives partially fail or data is corrupted is severely limited. Companies like drivesavers.com or Ontrack can't do as much with complicated proprietary configurations. However they often recover damaged data from single hard drives formatted with NTFS (The Windows standard), even those that have been in fires or floods.

Low Capacity. Most NAS solutions are limited to 4 drives. High-Rely designs are available with up to 10 1TB (TeraByte) drives in a single enclosure. 10 Terabytes of storage just isn't available in low end NAS solutions.

Higher Administration & Lower Security. Most NAS boxes are based on Linux running Samba to share their hard drives. The problem is that if you change a password in Windows for a user, you may be forced to change the password a second time for the NAS. This extra administrative burden is eliminated when using High-Rely drives, which inherit the full security capabilities of the host server, including the ability to compress and encrypt with the user's default login credentials.

Limited Tray Availability. Many NAS solutions are intended to be fixed storage solutions. Purchasing additional drive trays is difficult if not impossible. Additional High-Rely drive trays are readily available and inexpensive to purchase. It is important to be able to get multiple sets of backup media so that a rotation scheme can be set up that insures current data is always available

off-site.

Warranty and Reliability. NAS warranties range from 90 days to 1 year. The standard High-Rely warranty is 18 months. The care that has gone into the cooling system, the audible alerts, and the fact we warrant everything including the hard drives make High-Rely a more enterprise solution than most NAS boxes.

Lack of help with Backup Software. NAS vendors are in the market of supplying generic storage. Highly Reliable Systems provides true backup solutions. That means if you need advice on how the latest version of Backup Exec™ or other popular backup software works with our product we can and will help you.

No Monitoring or Auditing. Being able to have a log of who accessed your storage device and when important failures occur can be important. NAS devices don't provide this important security and manageability feature. With Direct Attached Storage (DAS) such as High-Rely drives, this information is available to you natively as part of the Windows Event viewer and auditing system.

Conclusion. NAS products have a definite utility and place in the business enterprise. However, most NAS boxes are not designed to be backup devices and lack many of the necessary details to make your enterprise's backups efficient, affordable and truly reliable.