



Key Technologies

- Hot Expansion for RAID 5
- Journaling File System
- Drive Roaming
- Built-in Tape Backup Software

Hot Expansion for RAID 5

The hot-expansion function is used to enlarge the capacity of a RAID 5 group without shutting down the system. With the hot-swappable hard drives and RAID hot-expansion, it is now possible to expand your storage capacity on demand while getting the maximum system uptime.

For example, assume that you only need 480GB of storage capacity. You can connect five 120GB hard drives to NASStorage and create a RAID 5 group. A year later, 480GB storage capacity might not be enough and you will need 240GB more. At this time, you just plug in two 120GB hard drives to NASStorage and join them into that RAID-5 group. You will get a RAID group with the capacity of 720GB (480GB + 240GB). All these are done while the system is still on-line.

Form hot-expansion several hard drives at the same time

No need to migrate existing data before expansion

The logical volumes within file systems can be dynamically expanded with zero downtime

For UNIX/Linux: no need to re-configure mounting point and access rights

For Windows: no need to change the setting of Network Drive and share permissions



Journaling File System

A journaling file system is a fault-resilient file system which writes a journal that keeps track of where data has been written or removed. The journal keeps track of where the file system puts each extent. Then, if your system crashes, you can be back up and operational much more quickly with a journaling file system. It also recovers unsaved data and stores it in the location where it would have gone if the computer had not crashed, making it an important feature for mission-critical applications.

The journaling file system can ensure file system consistency and fast recovery in the unlikely event of a system crash or other abnormal failure. With the journaling file system, NASTorage can recover from an abnormal shutdown in a few minutes.



Drive Roaming

Drive Roaming is one of the RAID enhancement technologies by Ingrasys. With this function, it is now possible to change the location of a hard disk without reconfiguring the RAID. While turning off the NASStorage, you can physically move the hard disks to any IDE channel. After power it on, the NASStorage can still recognize the RAID group the hard disks belong to and mount the volume automatically without losing your valuable data.

It is done by keeping the RAID configuration and RAID signature in each RAID member. After moving the hard drive to new location and turning on the NASStorage, it will try to find and match those hard drives with the same RAID configuration and RAID signature. Therefore, the NASStorage can recognize the RAID volume and mount it automatically. Meanwhile, the security settings of RAID volume remain unchanged as well.

It is also possible to move RAID members between different NASStorage systems. The difference is that you should open the Administration Page to find the RAID volume to import the RAID configuration and mount the RAID volume. Besides, the security settings will be cleared hereafter.

The "Drive Roaming" technology facilitates the RAID management for NASStorage. You can arrange the locations of the hard disks as you want without changing RAID configuration or rebuilding RAID. All you should do is just to plug out and plug in again in the order you wish, NASStorage will recognize which hard disks belong to the same RAID group and which are not. There is no any degradation or rebuild task perform during the process. The administrator can deploy the RAID members easily without any annoyance.



Built-in Tape Backup Software

NASTorage builds in tape backup software for data protection. With the software, it is easy and comprehensive to make the pre-schedule or manual backup tasks. You can back up your selections either by schedules or immediately with just a few steps.

Even better, all backup operations-back up, restore, schedule, and view task progress-are done on web browser interface. It does not require any specific OS platform; you can manage backup operations on Windows, UNIX or Macintosh.

NASTorage supports both full backups and incremental backups for you to make backup plans. Full backups copy all selected data into tapes, which provide full protection but usually takes a long time. Incremental backups only copy new and modified files, taking much less backup time. Usually you can interleave full backups and incremental backups to balance between backup time and protection level.

NASTorage built-in tape backup software conforms to open standards by adopting UNIX-tar format. The backup tapes can be restored by any backup software which supports UNIX-tar format. No more worries about being tied up to proprietary formats.