

Migrating Microsoft NT4 to Windows 2003 – Using HP OpenView Storage Mirroring



Table of contents

- The traditional migration 3
- Summary of advocated solution 4
- How do I get started? 5
- How will the data get moved? 5
- What HP storage arrays can I use this for? 5
- How will security be affected? 6
- Where do I go now? 6



“Sorry dear, I will be working all weekend. We're upgrading some servers.”

If you have ever been involved in a server upgrade to a new operating system or hardware platform, then you have probably said those words.

As of mid-2003, it is estimated that 43% of Microsoft® Windows® Servers still run Windows NT4, even though Microsoft has officially announced an end to support of that platform for most customers by June 2004.

Past the compelling argument of supportability, the long list of features in Windows 2003 (some of which from Windows 2000) is finally making most of the Windows NT4 procrastinators take notice.

This document highlights the primary considerations of migrating “across the wire” from a Windows NT4 platform to Windows 2003.

- The traditional server migration
- Summary of advocated solution
- How do I get started?
- What data can I move?
- How will the data get moved?
- How will security be affected?
- Where do I go now?

The traditional migration

Most enterprise environments have come to an understanding that “in-place upgrades” from one operating system to another is more problematic than beneficial. This is particularly true when skipping a generation, such as moving from Windows NT4 to Windows 2003

(without going “through” Windows 2000). So, the primary method of server migrations today is “over the wire.”

Most over the wire migrations resemble the following weekend timeline:

- 6PM Friday nightUsers forced off and backup began
- Later Friday nightBegin moving data from old platform to new platform
- All day SaturdayData moving (and no user access allowed)
- Sunday morning“Point of No Return” where migration should look optimistic or rollback should begin
- Sunday nightUsers begin returning to system

For most server migrations, updates, and consolidations the technical team will give up a weekend (perhaps even a holiday or two) because of two assumptions of the migration project:

Assumption 1 = Users cannot be on the production server while the data is being migrated to the new platform, because the files must be dormant to ensure everything is moved.

Assumption 2 = A “Point of No Return” is required, so that if the migration is not going well, a recovery window is still available to ensure the users do not lose weekday productivity.

Combined, these two assumptions force I/T departments to sacrifice their weekends (and therefore cause morale decay, team burnout, and perhaps overtime costs). In addition, because most enterprises are spread across multiple time zones, the window is constantly shrinking.

This results in lost productivity by users (and therefore lost profitability by the company).

Therefore, the challenge for HP to solve for our customers becomes how can HP help customers take advantage of the new features of Windows 2003 (and thereby ensure supportability), without incurring the pain associated with traditional migration and consolidation efforts.

Summary of advocated solution

First, it should be stated that the “Frontline Partnership” between HP and Microsoft gives HP an unparalleled understanding of enterprise environments and solution requirements. HP OpenView Storage Mirroring (SM) is a replication technology, for Windows servers, that is based on the industry leader for Windows replication—Double-Take by NSI Software.

OpenView SM runs as a Microsoft Windows-based service on any Windows server platform, including Windows NT4, Windows 2000, Windows-Powered NAS, Windows Server 2003—including the newest release, Windows 2003 Storage Server. Over the past seven years, the replication engine in OpenView SM has been installed in more than 20,000 sites and is independently certified for the Windows server families.

Typically, this software is used by HP customers who desire disaster recovery or centralized backup. This is due to OpenView SM’s ability to replicate data from server to server at a byte level. As small portions of files are changed at one location, those actual bytes are transmitted to a remote server and reapplied to a redundant copy of the data. This has brought business continuity and data protection to the masses for HP customers. However, the

same technology can be leveraged to achieve migration between servers.

OpenView SM does not require that the source and target platforms be similar—neither by Windows version (Windows NT4 or Windows 2000 or Windows 2003) or hardware architecture. This allows customers of legacy HP/Compaq servers (or even those from other manufacturers) to easily migrate to the more advanced HP platforms. The only requirement is that the older platform and new platform each run a Windows server operating system.

One of the core strengths of OpenView SM is that even the initial baseline mirror of the data can be done while the users are still accessing the data. The baseline and all real-time initial changes are accomplished without concern for open files or locks.

Instead of the weekend schedule described earlier, with OpenView SM replication, consider the following week-day schedule.

Monday morningBring up new server and install OpenView SM.

Monday afternoonBegin mirroring and replication.

Wednesday/Thursday Mirroring is complete (and replication has been real-time), so both servers have identical data.

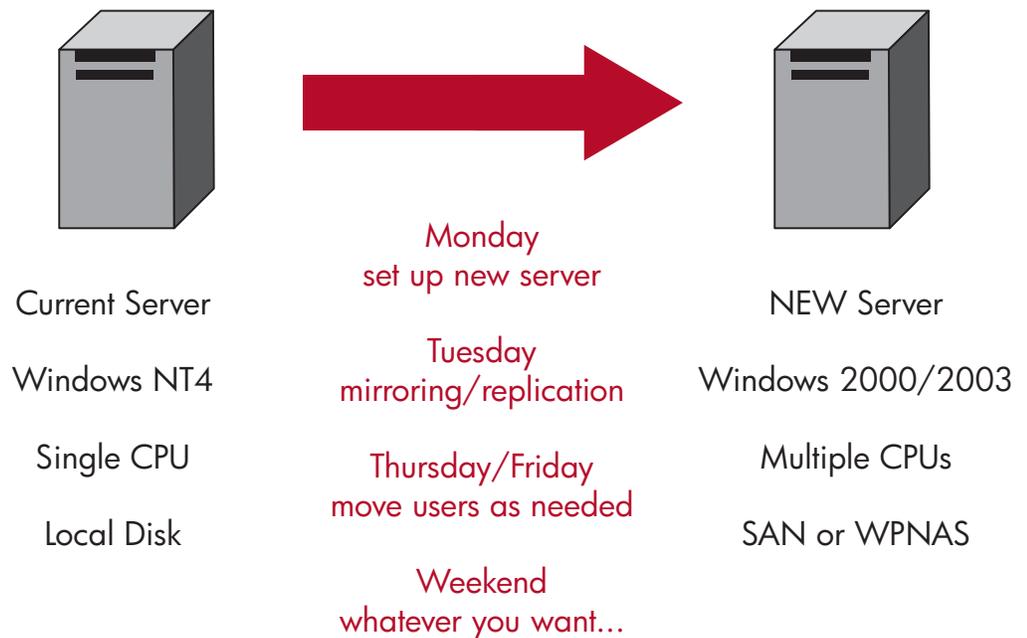
Thursday afternoonAllow for test users to check new data.

Thursday/FridayIf data is good, move rest of users.

Now, consider the two false assumptions that force I/T managers to give up their weekends.

Assumption #1—Users cannot be on the system while populating the new platform.

Fig 1.



In reality, because OpenView SM is not impacted by open files, users can remain on the existing system while the new server is populated with data. Because of OpenView SM's real-time replication, as soon as the initial mirror is completed, everything is current.

Assumption #2—Migration projects require a "Point of No Return," so that the original environment can be recovered after an unsuccessful upgrade.

In reality, the new platform operates side-by-side with the existing platform. Instead of trusting that the upgrade is going well over a weekend, test users can be asked (during the business day) to confirm the validity of the migrated data. If everything looks good, the remaining users can be systematically re-pointed. If something looks suspicious, the original platform is unchanged. The test users can be returned to the existing server (which has never been powered off).

Collectively, without a "quiet period" where data is being moved and without a "point of no return," there is no need for file server migrations to occur on weekends.

How do I get started?

OpenView SM runs on your existing Windows servers—and is available through your preferred HP channel partner. Acquire licenses of the OpenView SM product and install them to the production servers, as well as the new machines. White papers are available to assist you with the details of your migration at www.hp.com.

How will the data get moved?

After installing OpenView SM replication software on the production servers, identify the files, directories, or drives that have data to be migrated. Optionally, file masks can be used to include or exclude file types (such as excluding *.MP3 or *.JPG files).

Mirroring (the initial baseline of whole files) will begin and progressively work through the entire file structure that you have identified. Simultaneously, replication of the real-time changes is also enabled. Thus, as users change files throughout the data mirror, those changes are also reflected on the target. When the mirror is complete, the new machine is current, so testing and moving the users is all that is left to do.

What HP storage arrays can I use this for?

One of the biggest advantages of OpenView SM is the replication of any data provisioned by a WinTel server file system. This includes (but is not limited to) internal storage to the server, HP Smart Array cluster storage, Just a Bunch of Disks (JBOD) attached storage, Network

Attached Storage (NAS) and Storage Area Network (SAN) attached storage.

Examples:

- All HP StorageWorks NAS
- HP StorageWorks MSA1000
- HP StorageWorks Virtual Array
- HP ProLiant packaged cluster

How will security be affected?

As long as the source and target (existing and new production) servers are in the same domain, OpenView SM uses the native security attributes of the files. So, the permissions to the new copy of the files will be the same as the permissions to the original files. For both copies of the data, the domain controller provides the keys for authentication.

Where do I go now?

OpenView SM is available in multiple sku's through the HP partner channel, as well as an option on various HP hardware platforms (including ProLiant, Storage Servers NAS units, and MSAs). OpenView SM is licensed per server (and stratified by the level of the operating system—server, advanced/enterprise, and data center).

After the migration is complete (and all parties are satisfied that the new server is successful), then the original server makes a great target for disaster recovery. Many HP customers have found that if the original server hardware was good enough to do the job before the migration, it is capable of standing in during a crisis. Those customers simply re-implemented the hardware as a new Windows 2003 server (at the remote disaster recovery site). Because OpenView SM does not have different add-on modules, full functionality for migrations, disaster restoration, and high availability/failover are all included. This breathes new time into the useful lifespan of the original server, thereby increasing the return on investment of the original hardware.

Additional example use cases

1. NAS to SAN storage migration
2. Branch office stranded server storage to centralized data centers
3. Small office server-to-server protection
4. Offload or move backup operations to centralized storage area

5. Multiple site replication—fan-out or fan-in

Example 1: NAS to SAN storage migration—As more environments move from local storage-based servers to NAS/SAN, the question of how the actual migration will occur becomes more frequent. Using the same techniques previously outlined, one can migrate from local storage to a NAS, a server utilizing a SAN, or even a NAS-gateway to the SAN. In all cases, the fundamental requirement is that the data is moving from one Windows platform (with local storage) to another Windows platform (with more manageable storage), like that of a Windows-Powered NAS (or storage server).

Example 2: Branch office server to centralized data center—Even in the enterprises where protecting the corporate data has become a standard, branch offices tend to still be isolated to tape solutions. This forces non-I/T personnel to be responsible for tape rotations and cleanings; and the result is higher manpower costs and lower restore reliability. By efficiently replicating the byte-level changes within the data using OpenView SM, one can bring the branches' data back to a centralized data center. This provides disaster recovery for the branches, and allows backups to be done at the centralized facility (by I/T personnel and using more advanced tape technologies).

Example 3: Small office server-to-server protection—Whereas large enterprises may have multiple data centers and a myriad of server technologies, the small office relies heavily on its one or few server resources (with limited I/T resources or personnel). When the primary server fails, the office productivity can grind to a halt. OpenView SM provides a simple and cost-effective way to fail over to a second machine (in the same office or perhaps at an employee's home). The result is rapid recovery of the server, and the small office continues doing business.

Example 4: Consolidate backup operations—Today's corporations are increasing their business day, as geographic and national boundaries no longer limit effective commerce. Unfortunately, this results in an ever-shrinking backup window. However, the redundant copies of the files on OpenView SM target servers can be backed up, even when the original copy of data is in use. Without expensive and application-specific backup agents, the second copy of the data can be protected using existing tape technology, attached to the redundant server. And perhaps even better, the backup can be done at local disk/tape speeds, instead of a media server backing up multiple application servers.

Example 5: Site replication—Many replication needs are not based around data protection or availability. Like the discussed migration solutions, some business goals must get the data to an alternate location. OpenView SM can provide a corporation with a master-content server and then ensure that all regional locations (and branch offices)

receive the replicated files, regardless of whether it is a custom application or the Human Resources directory for vacation forms and business card requests.

When considering the range of the preceding examples, the key to remember is that OpenView SM provides the most efficient, byte-level replication of files within a Microsoft Windows server environment. Whatever the business goal (migration, protection, availability, or distribution), it starts with having multiple copies of your files, so it starts with OpenView SM.

For more information on OpenView SM visit www.hp.com, including information on how to migrate your existing servers, how to replicate data for business continuity, and how to improve and centralize backups.

To learn more about HP's offering, visit www.hp.com.

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