

EXECUTIVE WHITE PAPER

Moving data successfully: Take 10 for a smooth transition to new storage

A lot can transpire between the time you take delivery of your new storage and the day it's fully integrated into the data center. Good things can happen—like getting faster performance for virtual servers, higher utilization because of resource consolidation, and savings from features like thin provisioning. Unfortunately, so can bad—like stalled applications, lost data, business disruptions, and immobilized end users.

Fortunately, you can in large part control the outcome of the transition from your old to new platforms. Experience suggests that a few basic steps can make all the difference between good results and bad. Follow the ten steps below—six to do before you start to migrate, two during, and two after—and your team can prepare and execute a successful transformation. You'll be able to reduce errors, successfully migrate all the data you need to migrate, shorten project duration, and even come in at or under budget (really!). Done correctly, the migration can also be a prime opportunity to efficiently and cost-effectively complete related or long-overdue work like systems consolidation, upgrades, or reorganization of IT structures to better serve your business and user community.

In most organizations, the project manager in charge of these ten steps will be the IT storage director or manager who marshals required resources from across the enterprise. To get the most out of the process, create a work breakdown structure (WBS) for each step and include it in a project database. And make sure that this project database that you start building in Step 1 contains every item that you plan, complete, change, target, every list you make, and so on. You'll use this database to manage the entire migration process, from setting customer expectations to actually migrating the data. It will be your all-in-one working document, project summary, and reconciliation tool (that is, did we do everything we set out to do, exactly as we set out to do it; if not, what changed and why). It will help you measure efficiencies and more easily acquire and release resources as you move through the process.

1 – Define, document, and publish objectives and schedule

Describe project objectives in terms of schedules, resource use, and outcomes. Define measures of success—for example, the number of servers you expect to migrate weekly, the total number of arrays to be transformed from one storage scheme to another, the number of departments or user groups moved by the halfway point, or the processes that will be completed during non-business hours. Document both your objectives and schedule and make sure everyone gets a copy.

Checklist:

- Develop project objectives that integrate requested or stated IT, operations, engineering, and business unit goals
- Set the schedule, taking into account user, group, and application priorities
- Specify all required resources—that is, people (internal/external, IT/non-IT), equipment, and tools
- Document what gets removed, consolidated, added, and extracted (for example, data from a merger/acquisition or another part of the organization)

Tools you can use:

Ask your storage solutions consultants if they can offer—and even populate—survey and structural documents from which you can work to identify existing elements and to set project objectives.

2 – Commit to manage

Make resources available to meet schedules. Clarify who owns the project, who can allocate resources, who can resolve disputes. Define the process you want to follow when you discover a team or department can't meet their commitment(s)—for example, how will you proceed when the group that agreed to be ready by week three suddenly announces that a business crisis will prevent them from being able to turn over their systems until at least week five?

Make sure that your project management team has both the authority over and access to resources needed to accomplish objectives. Lack of cooperation or disputes over division of labor/ownership halfway through a project can cause rippling delays.

Checklist:

- Create milestones—for example, 2PB moved by June 30—and assign responsibilities among departments, vendors, and outside professional services providers
- Establish the cut-off policy for migration changes; track milestones and enforce the policy

3 – Discover and analyze what really exists

Are you sure you have 500 host servers that will be impacted? Or storage from just two vendors? Inventory lists can be off significantly, so you'll need to conduct extensive discovery to make sure you've got the "real" list from which to assign priorities and achieve the best cost/value ratio. Facts to confirm include: total number of existing servers, arrays, and host-to-storage fabrics; front-end adapter utilization; systems ownership; capacities; vendors/versions; and current RAID types.

Checklist:

- IT and storage teams collaborate to define the view—that is, will the project impact hosts, storage, both?
- Assign discovery tasks and establish the schedule and milestones

- Complete a performance profile—document the performance baseline that you need to meet or exceed
- Identify improvement targets—for example, increase capacity utilization by 40%, move additional aged data to more economical tier 3 storage, etc.

Tools you can use:

Industry tools exist for select elements of the discovery and analysis process. Unfortunately, most of these tools are not integrated and require considerable effort to merge and effectively utilize their output silos.

The better choice would be to work with a solutions provider that leverages a SAN analytics engine to automate intelligence gathering. A typical manual discovery, mapping, and auditing project for an enterprise SAN environment can take 2-3 months and cost hundreds of thousands of dollars for an environment of 200 servers or two petabytes. Manual discovery processes are highly time-intensive and too often produce inaccurate results. A business-process-driven analytics program can help you much more quickly and affordably scope the existing array environment, complete data classification, clarify charge backs, and streamline other discovery tasks to produce an executable plan.

4 – Get to know your new equipment, whether it’s from an incumbent vendor or a new supplier

Ideally you’ve already done lab testing on your new equipment before you purchased it. If not, do it now. You need to confirm that the new platform is compatible with existing systems and that it will deliver performance and reliability to meet specific business needs and SLAs.

The old-to-new-storage transformation should integrate new features or at least make the integrated platform ready for them. New technology comes with new functionality that can save money and add value, but sometimes at a staffing, performance, or other cost. The more you know about the functionality available with the new platform, the more you can leverage it, make it part of the success objective, and understand tradeoffs that might be required to use it.

A word of caution here: sometimes taking advantage of new-platform structures leaves you no return path to the old, and that in turn can mean permanent data loss. The best way to prevent losing critical information is to carefully map old objects to new objects before you start to move any data.

- Identify what features are tested
- Create new-features list for new arrays, servers, and switches

Tools you can use:

Vendors publish lists of performance and compatibility tests that are available for customer use. Select appropriate programs that you can run in your existing structure to

gauge various aspects of interoperability and appropriateness for your operating environment.

5 – Develop the storage model

In this step, you'll need to develop a specific storage model or mapping scheme. For example, you might decide to extract data associated with a newly acquired company or business line and isolate that information on a separate storage array or set of arrays. Or stipulate the consolidation of four arrays down to two. Another common objective is to pull Exchange email data off onto its own array.

Comprehensive storage migration is just not as easy as a straight copy. You may be moving from a non-RAID architecture to RAID6, FC to iSCSI, or from no disaster recovery (DR) to a DR environment. Plan for the specific transitions you've decided you can and want to make—for example, from RAID 1/0 to RAID 6, thick to thin provisioning, single tier to multi-tier, or local protection to remote protection. Move items like servers and LUNs through this storage model to optimize new allocations. If you've experienced persistent issues in your old storage model, now is the ideal time to re-evaluate and take corrective actions. A migration presents the simplest and most efficient opportunity to update or modify models.

- Consolidate current array configuration and discovery data
- Develop the new configuration plan
- Secure sign-off from all potentially affected parties

Tools you can use:

Solutions provided through professional services organizations can include a storage model to help automate much of this step.

6 – Make remediation decisions

Determine which devices you need to maintain with your new storage platform and then check manufacturers' support lists to determine working combinations. Based on this information, you can make necessary remediation decisions—that is, which systems must be brought into conformance with specific policies or current with the latest updates and/or patches. Keeping track of this in a database will reduce risk of failure. Automating entries—versus manually updating the database—further reduces risk.

- Define devices and systems to be remediated—for example, servers, operating systems, host bus adaptors (HBAs), switches
- Determine the schedule and assign responsibilities

Tools you can use:

Ask your vendor for a remediation matrix in a format that can be readily utilized by a solutions provider to automate the remediation process. Unfortunately, vendors typically do not deliver matrices indexed in software-accessible formats—but definitely ask about the availability of tools to streamline the process.

7 – Maintain project process and ownership during the migration

During the actual data migration, avoid log jams by clarifying task ownership and project processes.

- Establish clear division of labor within the project
- Set a structure for meetings—for example, status meetings, war room discussions, workgroup attendees and organization, oversight-group meetings—and leaders
- Communicate and acknowledge

8 – Track the transformation

Throughout the migration process, track what has changed or is changing—what's been consolidated, moved, and what metrics are different (new recoverability objectives for business continuance, for example).

- Appoint a manager for the process; this person plans for and notifies business units, users, and other impacted personnel of downtimes, transfer times, return-to-operations times
- Maintain tracking and status reports
- Check and confirm the migration from-to (MFT) list—verify that the migration from the old platform to the new was successfully completed

Tools you can use:

Storage vendors provide a full range of data migration and replication tools. Available data movers include: Brocade DMM; EMC MirrorView, Open Replicator, RecoverPoint, and SRDF; HDS True-Copy; Symantec Volume Manager; Vicom Piper.

9 – Audit

Losing business function or equipment in a migration has the potential to jeopardize critical business operations. Now that you've completed the migration to your new platform, assure that what you wanted to transform was really transformed.

- Check post-migration operations and establish a protocol to address issues
- Summarize post-migration performance considerations

Tools you can use:

Look for automated solutions from your professional services provider. The best tool automates the post-migration cleanup process by automatically identifying incorrectly configured items and reclaiming unmapped storage capacity.

10 – Evaluate

Now is the time to honestly evaluate what went right, what went wrong, and what needs to be changed. Effective reporting tools and accurate data are essential to completing a productive evaluation. The well-populated project database (or other project summary such as an information plexus) that you've been building through Steps 1-9 should by now contain all the necessary data for comprehensive evaluation of the project.

- Document results and benefits
- Make recommendations for modifications, enhancements, and future projects

Tools you can use:

Solutions and services providers with expertise in data migration processes should be able to provide evaluation walk-through guidance.

In summary, plan well, communicate clearly, follow these ten steps, and your team will be able to complete the migration more quickly, with minimal disruption, and most cost-effectively. The faster you can move your new platform from the loading dock into your IT infrastructure, the faster you'll be putting your investment to work and helping the business derive maximum value.



Ralph Hennen brings 15 years of storage experience to his position as Managing Director of Product Development at SANpulse. From his work on many enterprise migration projects, Hennen has developed numerous techniques for discovery, analysis, and auditing, as well as this ten-step course of action to which he attributes a track record of successful transformations.

About SANpulse

SANpulse delivers the industry's most comprehensive, customized, end-to-end solutions for SAN optimization and migration

Leveraging the pioneering SANlogics software platform, methodologies developed through decades of real-world storage testing, and many of the world's most tenured SAN Engineers, SANpulse delivers a dynamic modular mechanism to replace the labor-intensive and error-prone delivery optimization methodologies prevalent today. SANpulse has successfully optimized or migrated the SAN environments of many Fortune 500 clients, including the largest global financial firms, leading computer hardware manufacturer, and one of the world's largest IT management software providers.