

Five Steps to More Efficient Storage for Microsoft Windows Environments

The role of Microsoft® Windows®-based applications has grown dramatically in today's information-rich business operations. IT groups, large and small, have seen the number of deployed Windows applications and the amount of Windows data storage explode, creating problems with sprawling server and storage infrastructure, poor utilization, and complicated management.

IT organizations are tackling these problems on the server side using server virtualization solutions from vendors such as VMware®, Citrix®, and Microsoft to reduce the number of servers that need to be maintained and managed. You can achieve similar results for your data by consolidating storage for Microsoft applications.

Here are steps that can put you on the path to faster application performance, higher efficiency, better protection, and lower overhead and costs.

Step 1: Assess Your IT Environment

To start, identify all the components that make up your IT infrastructure today.

This should include:

- Microsoft servers and Windows desktops, including any virtualized servers and desktops along with the network connectivity they require
- All storage, including direct-attached storage (DAS) on servers, network-attached storage (NAS), and storage area networks (SANs)
- Various storage workloads, including Microsoft file servers like Microsoft Exchange, SQL Server®, SharePoint®, other business applications (ERP, CRM, and so on), engineering and technical applications, and server and desktop virtualization
- Data sets associated with each workload:
 - Where is the data now? Who accesses the data, and how do they access it?
 - How large is the data set, and how fast is it expected to grow?
 - What are the performance requirements for the different workloads?

Step 2: Monitor and Measure Storage Usage

Monitor your storage environment over an appropriate time period to determine how applications are being used and how data is being accessed. What constitutes an appropriate time period will depend on your business. Be sure to monitor during periods of peak usage such as month end, quarter end, or whatever peak events impact your operations most. Your goal is to identify trends and patterns across different storage workloads.

Tools such as Microsoft System Center Operations Manager can help capture the information you need. IT resellers often provide packaged services to help you monitor and measure storage usage in terms of both capacity and performance. They can help you with assessment as well.

Step 3: Connect with IT Initiatives

Once you have mapped your current environment and understand how storage is being used, you should create a business case for storage consolidation including connecting it to the appropriate business initiative. This should summarize your current operational problems with cost impact if known, establish goals for the project, and lay out the cost

5 Steps to Storage Efficiency

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2. Monitor and Measure Storage Usage
3. Connect with IT Initiatives
4. Creating a Plan
5. Implementation

Features Drive Efficiency

All Nimble Storage features are included with every system. Together they can increase storage efficiency and free up valuable space, allowing you to defer storage purchases now and slow the rate at which you must add storage in the future.

- Inline Compression
- Thin Provisioning
- Capacity-Efficient Snapshots
- WAN-Efficient Replication
- Zero-Copy Clones
- RAID 6 Protection

benefits of storage consolidation in your environment as specifically as possible. Resellers can help with this by providing you with a financial assessment or even a return on investment (ROI) or savings assessment.

Given the current trend toward flat or shrinking IT budgets, this step will be instrumental in justifying the project to management. Establishing clear goals upfront will help you make tradeoffs and measure success in the steps that follow. An example goal might be to reduce the backup window for Exchange and SQL Server to 20 minutes and enable maintaining hourly backup for 48 hours, daily backups for 7 days and weekly backups for 52 weeks. Another example of a goal is to enable reducing powering and cooling costs as well as reducing data space required by 4x.

Step 4: Creating a Plan

During this step, you plan the specific infrastructure changes in detail. This includes how the data for different workloads will be served from storage to meet capacity and performance needs. You will also plan what storage functionality needs to be implemented to meet service levels.

An important part of the exercise is to determine what specific infrastructure equipment you will need, including new purchases and existing infrastructure. Ideally, consider consolidating all data onto a single storage platform to eliminate silos of underutilized storage. Your planning should also take into account storage resiliency, data protection, and the storage efficiency technologies you will use (compression, thin provisioning, and so on). Some of the efficiency-focused features are discussed on the next page under “Are you storing your data efficiently?”

A detailed plan should break everything out into discrete phases such as:

- Installation, setup, and configuration, including setting up backup and replication
- Data migration
- Application changes

Be sure to factor in contingencies on which to fall back in case something goes wrong.

Step 5: Implementation

This step involves implementing the plan created in step 4. Deploying storage and migrating data requires careful execution. Make sure to document any changes to the plan in this step. It can help to have an IT reseller with prior experience implementing this type of consolidation plan assist you with some or all aspects of the implementation process, such as:

- Configuring storage volumes for different workloads
- Racking and cabling
- Migrating application data
- Connecting users, applications, and servers to storage
- Setting up data protection, replication, and miscellaneous services
- Final testing prior to cutover

Be sure to schedule downtime appropriately to minimize impact.

End by documenting your new environment. This will help you to evaluate the results of consolidation against your goals. It also helps refine the cost estimates you used during planning, such as rate of data growth, time spent, and so on. Finally, careful documentation will capture the best practices developed in implementing the plan, which can be applied to future projects.

Are You Storing Your Data Efficiently?

With IT budgets flat or declining, it is imperative to reduce expenses. You may have already taken steps to consolidate both servers and storage to reduce the cost of ongoing maintenance and management. Still, your storage requirements continue to grow.

Here are a few Nimble Storage features (included with every system) that can increase storage efficiency and free up valuable space, allowing you to defer storage purchases now and slow the rate at which you must add storage in the future.

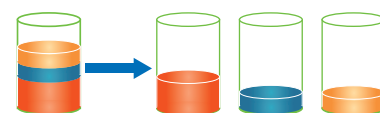
Inline Compression

Most of the data stored can be effectively compressed to reduce the needed storage footprint. The challenge is to do so without impacting performance at line speeds. Nimble's unique architecture and efficient compression algorithm enables inline compression of the data being stored. The space savings range from 30 percent to 75 percent for most data sets as measured across Nimble Storage's entire install base.



Thin Provisioning

Traditionally, when you provision a disk volume for an application you pre-allocate storage—based on a best guess—only to have it sit unused for months or even years. With Nimble Storage thin provisioning you no longer have to allocate storage up front. Storage is treated as a shared resource, and capacity is consumed only as needed, allowing valuable space to be freed for other demands. Thin provisioning and the use of shared free space can reduce your storage capacity by 25 percent.



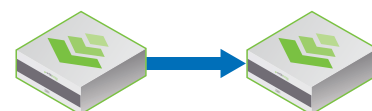
Snapshots

Nimble Storage snapshots are efficient and fast. Unlike methods used by competing products that copy data, disrupt your workloads, and consume your storage, Nimble Storage can take up to thousands of snapshots without excessive space penalties and virtually no performance impact. That translates to months' worth of backup being efficiently stored on the same system as the primary data. Nimble Storage Snapshot technology delivers as much as 90 percent space savings over competing full backup solutions.



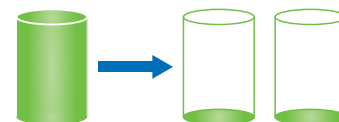
Efficient Replication

Replication can be an effective way to ensure business continuity, but the network and storage overhead it creates can be prohibitive. Nimble Storage is WAN efficient and performs only incremental compressed block transfers after an initial baseline, saving bandwidth and reducing the storage required for online backups. WAN efficient replication with Nimble can help you save up to 75 percent on bandwidth and disk space.



Zero-Copy Clones

You often need to copy a complete data set for development, testing, or other purposes, wasting significant time and storage in the process. Nimble Storage's zero-copy cloning functionality lets you accomplish cloning in seconds and only uses additional storage space as changes are made to the clone. This technology is impactful for development or virtual environments that otherwise maintain numerous, nearly identical copies of the same operating systems. Space savings can be as high as 80 percent—equal to the size of the original source data set minus any data that was subsequently changed.



RAID 6

With disk drives getting larger, you need RAID protection against disk failures—even double disk failures. But Mirroring (RAID 1) is too expensive and most RAID 6 implementations have poor write performance. Nimble Storage's high performance implementation of RAID 6 is the answer. RAID 6 protects your critical data from double disk failures with no performance penalty and offers approximately 40 percent space savings versus data mirroring. Nimble Storage also embeds checksum and address data at the block level to ensure that data is protected.



Get Started with the Right Partner

Once you have a consolidated solution with network storage for your Microsoft workloads, you'll discover how easy it is to manage and scale. Choosing the right partner and the right storage infrastructure can help you breeze through these steps and put you on the road to more efficient storage for your Windows environment.

Nimble Storage's hybrid flash-optimized architecture enables you to consolidate on to a single, high-performance, scalable, and easy-to-manage platform that will help you achieve storage efficiency.



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