

# ACHIEVE IMMEDIATE RETURNS WITH PRACTICAL STORAGE MANAGEMENT

WHITE PAPER

**NORTHERN STORAGE SUITE**  
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## **INTRODUCTION**

Storage Resource Management [SRM] has many definitions. Sometimes it is a field of Network Management that includes only storage monitoring and quotas, other times HSM and Backup are also included. Some journalists even choose to include Anti-virus and E-mail Archiving.

SRM is a term that tends to confuse as much as it clarifies.

The fundamental need to consider storage when forming network management and network development strategies is evidenced by the wealth of information available within the press and the prolonged and dramatic growth within storage management software market. It is obvious to all IT professionals that storage must be managed, but with SRM still only a vaguely defined concept it is very difficult to leverage knowledge gained by like-minded professionals who have already implemented a successful SRM policy.

As a means of highlighting the very real meaning of SRM this White Paper will describe the storage-related issues experienced by four organizations. It will further show how these organizations overcame these issues using a very practical definition of Storage Resource Management. These are four very common scenarios that serve as a usable description of what form storage-related issues can take and, more importantly, how Storage Resource Management should best be defined.

### **SCENARIO #1: RECLAIM WASTED CAPACITY**

The amount of information organizations store increases about 60 percent each year. However, it's estimated that, at most, only 15 percent of everything stored is strategically significant. The ability to reclaim wasted capacity should be considered a fundamental element of a Storage Resource Management policy.

### **SCENARIO #2: PLAN FOR THE FUTURE**

According to a recent survey conducted by the University of California it is estimated that 1.5 billion terabytes of new information are created each year. The ability to accurately predict future capacity needs should be considered a fundamental element of a Storage Resource Management policy.

### **SCENARIO #3: CONTROL USER DATA**

In the majority of industries an organization's users are directly responsible for over 90% of stored data. Those users see the possibility to store data as a right and are not aware of the often crippling costs involved. The ability to control user-generated data should be considered a fundamental element of a Storage Resource Management policy.

### **SCENARIO #4: SELF-MANAGING STORAGE**

IBM puts storage administration costs at twenty times the storage hardware costs. So for every dollar spent on hardware twenty must be spent on management functions. The ability to reduce direct administrator involvement in storage management should be considered a fundamental element of a Storage Resource Management policy.

## #1: RECLAIMING WASTED CAPACITY

**COMPANY:** Leading engineering firm in business over 100 years.

**CHALLENGE:** Managing the storage of the reams of data (i.e., highly detailed CAD schematics) created by its team of engineers. Unchecked disk consumption had escalated into a significant drain on the company's IT time and resources. It was suspected that a significant proportion of the data stored was not business related.

**SOLUTION:** IT's chief task is to serve the engineers who design highly sophisticated conveyance, storage, and retrieval systems. The company's over-arching goal is to increase production efficiency and flexibility for their clients; IT's goal is to ensure that systems support engineering in much the same fashion – increased efficiency within storage systems.

The company selected Northern Storage Suite for its ability to manage the content of its fourteen file servers. Through the functionality incorporated in the suite the IT department was able to identify unwanted content and have that content removed automatically.

### **POLICY DESIGN AND IMPLEMENTATION:**

Two of Northern Storage Suite's five key feature sets were used to achieve this solution: Storage Reporter and Storage Assistant. Storage Reporter identified the problem areas, the space that could be reclaimed. This information was then used to create an automation job in Storage Assistant that removed the unwanted files and reclaimed the capacity.

1. Create a new File Type Group "Unwanted Files". Add the file types mp3, mp4, mov, mpg, swf, wmv to this new group.

*Files can be classified and grouped as you wish. View the content of your file servers according to file usage; create an "Office Files" group, or "Programs" group. Now you can see exactly what percentage of your disk space is consumed by which kind of file.*

2. Schedule a scan of your entire network to be performed that night and repeated every night.

*Scanning the network to ascertain this information can be disruptive; the ability to schedule your scans ensures zero impact on retrieval speeds for users.*

3. Arrive the next morning and check the results in Storage Reporter.

*The IT group was astonished to learn that 32% of their aggregate capacity was taken up with wasteful data. This dramatic realization is very common to first time users of Northern Storage Suite. Thirty-two percent of wasted space means 32% clutter in your backup cycle and, more importantly, slow and inefficient restore processes.*

4. Time to take Action! Create an Assistant.....

*Once IT drilled down to find where unwanted files are stored, they created an "Assistant" using Northern Storage Assistant. The Assistant was*

*configured to crawl the network each night at a fixed time to automatically find and delete unwanted files.*

5. Reclaim space using the Assistant.

*The Assistant was triggered to run after business hours. When the IT group returned the next morning and checked the Northern Storage Reporter screen, they were delighted to see that the 32% of wasted space initially reported was completely reclaimed. This process was run every night from that point forward, providing the entire network with transparent protection against unwanted files...translating into more efficient data management given shortened backup cycles and accelerated retrieval.*

6. Monitor and curb user tampering.

*It's not uncommon for a small but not insignificant portion of users to change file extensions to keep them beyond the reach of typical monitoring and management tools. Using Northern Storage Suite eliminates this kind of tampering by allowing for scans of binary files. Indeed, the IT group scheduled a weekly report that scanned specifically for renamed binary files – to make sure users weren't simply renaming files to avoid detection and deletion.*

7. Policy enforcement.

*To further guard against user abuse, scheduling a "Files with Hidden Streams" report let users know that policies cannot be avoided. Those determined to be in violation are sent a "friendly" email to make them aware of the need to be in compliance.*

## **CONCLUSION**

In just several relatively easy steps, a leading engineering firm was able to reclaim 32% of wasted capacity – significantly slashing backup and restore time, streamlining network performance (and server uptime)...and giving the IT group more time to attend to other tasks. They were also able to put checks on potential user abuse. More companies are realizing the bottom-line benefits of managing their storage infrastructure by managing user data with Northern Storage Suite. Because storage management is no longer strictly an IT concern; it is intrinsic to the way your company performs and competes.

## #2: PLAN FOR THE FUTURE

**COMPANY:** One of the nation's leading Insurance providers.

**CHALLENGE:** Central office houses 450 workstations and serves as the hub for eight regional offices throughout the US. IT's chief task was to support smooth, uninterrupted claims processing. This placed increasing demands on IT resources as more time was needed to manually manage the escalating influx of data.

**SOLUTION:** The IT group was determined to find a tool that enabled them to track and project storage usage, and provide a mechanism for effective usage control. Using Northern Storage Suite they were able to establish global trends and manage users by keeping them within acceptable thresholds.

### **POLICY DESIGN AND IMPLEMENTATION:**

Two of Northern Storage Suite's five key feature sets were used to achieve this solution: Storage Reporter and Storage Chargeback. Storage Reporter identified the current usage trends and forecasted 'full-dates'. Storage Chargeback, in turn, showed the costs that would be incurred if the current usage trends continued through the coming budget year.

After running several Initial reports it became clear that current trends were unsustainable – which would push associated costs well beyond acceptable limits. After presenting these pieces of information, IT was granted the authority to extend their research and begin designing a policy of usage control via a “chargeback” framework which was implemented as follows:

1. Schedule a nightly scan of the entire network and accumulate a 30-day base of data from which reliable analysis can be made.

*Tracking usage over this period of time is critical in establishing trends and making projections. This information is the backbone of any storage management policy, as it shows actual usage patterns that lead to more accurate projections from which long-term plans can be made.*

2. Create a Chargeback Job that calculates the monthly cost of stored data, using a flat rate of 0.03 credits per MB in your Billing Class, [where 1 credit = 1 USD].

*The results of this Chargeback Job will show the true monthly cost of your stored data. From this data financial projections can be made. (These interim results can be used for internal reporting.)*

3. Monitor the results of these scans and Chargeback Job.

*Intermittent monitoring of results ensures that any sudden usage spikes are known and the causes behind them identified/remedied.*

4. After 30 days, schedule two “Host Near-full Projection” reports to be run at the end of each month. Have the reports show usage levels in 6 and 12 months.

*These reports will show the anticipated usage levels of each file server in 6 months and 12 months. This information clearly shows the level of urgency that should be associated with active storage management. Figures of over 100% at six months are common and signal a need for immediate action.*

5. Now schedule two “Cost Prognosis per Cost Center Accumulated” reports. Use 6 months and 12 months as the projection periods.

*The results of these projections will show the accumulated cost of stored data in 6 and 12 months according to the current usage trend. This attaches a real cost to the total data stored as well as the true cost of escalating storage use. Translating usage into a hard cost provides organization-wide incentives for more economical and efficient storage usage.*

6. Use the data provided by the four reports to appraise the organization’s storage future and determine the path ahead.

*The organization now has four figures, four pieces of hard data on which to base decisions regarding storage strategy: How much data will we be storing in six and twelve months? How much will stored data cost the organization in six and twelve months? The answers to these questions provide a definitive path forward – since implementation, the insurance company has been able to keep usage in line, while efficiently managing their storage infrastructure by keeping several steps ahead of the trends.*

## **CONCLUSION**

Using Northern Storage Reporter and Northern Storage Chargeback provides a complete, 360-degree perspective on costs and usage trends. As we’ve shown, having the ability to track and reliably project usage over the next 6 or 12 months ought to be the first phase of the planning process. The data gleaned from running Northern Storage Reporter provides the underpinnings of the overarching usage policy, through which the organization can decide which enforcement mechanism it chooses to implement – in the case described above, the organization opted to use a chargeback mechanism, making organizational units directly accountable for their storage use, to keep usage and costs within acceptable limits.

### #3: CONTROL USER DATA

**COMPANY:** One of the world's largest publishing houses.

**CHALLENGE:** Spiraling usage and an unsustainable strategy of makeshift, temporary fixes. Users within the organization are not aware of what a 'reasonable upper limit of storage use' really is. It was guessed that some users placed the figure significantly higher than the administrators who were struggling to maintain the storage infrastructure.

**SOLUTION:** The IT department implemented Northern Storage Suite to establish a reasonable upper limit of storage that suited their infrastructure and the majority of their users. The presence and importance of this storage quota was then communicated through a user-specific storage portal. The portal gives users a complete picture of their usage – as well as the ability to independently manage their data to remain within the newly established reasonable upper limit.

#### **POLICY DESIGN AND IMPLEMENTATION:**

Three of Northern Storage Suite's five key feature sets were used to achieve this solution: Storage Reporter, Quota Server and Storage Portal. Storage Reporter was used to identify a reasonable upper limit of usage for the user population, Quota Server enforced this upper limit and triggered Storage Portal notifications which in turn raised user awareness (and gave them the ability to "self-manage" their allotted space). The publishing house's IT group took the following steps:

1. Schedule a scan of all devices where user data is stored across the network. Configure this scan to be first performed that night and to be repeated every night.

*This record of actual storage usage forms the basis of any kind of storage management policy. It is very difficult to take accurate and lasting action without the knowledge provided by Storage Reporter.*

2. Check the results in Storage Reporter the following morning.

*A quick overview of the network reveals if and what action is required. In this case the average host usage level was 76% and the average quantity of data stored by each user was just under 850 MB. This data helped to define a 'reasonable upper limit' of storage use for the organization – general host levels are high, so the limit needs to be tied to what the users are now storing. It was also revealed that 10% of the organization's users (the production staff) accounted for nearly 50% of the total storage usage.*

3. Create an "AutoUser Quota" that monitors usage by user account. Set the upper limit to 850 MB but allow users to exceed the quota by 5% before being locked out.

*Setting a relatively tight quota but including some overdraft gives IT a quick grip on the situation while softening the impact of the policy. Users now have some time to understand what is expected of them before being refused the 'right' to save. Most importantly, users now have an understanding of what a reasonable level of storage consumption really is, and they know where they stand in relation to that level.*

4. Configure these user quota to send Storage Portal notifications at each threshold level. Have these notifications repeated every day while the threshold is exceeded.

*By demonstrating to users where they stand in relation to the organization's 'reasonable upper limit' and by leading them to their portal pages, they are both made aware of the fact that storage is neither free nor inexhaustible and that there are easy ways in which they can reclaim some of their storage quota for their future needs. Storage Portal offers a great deal of functionality in facilitating self-management.*

5. Confirm the success of the policy implementation in Storage Reporter.

*Scanning results from the night after the quota policy was introduced showed an immediate drop in storage consumption. Average host levels were now down a much healthier 64% and average user levels were close to 700 MB. However, some unwanted content still remained on the file servers.*

6. Follow-up with specific users to establish where space could be saved or if an increase in quota is needed.

*It is not reasonable to assume that one quota size will fit all users; some customization is likely to be needed. The busy morning at the helpdesk following implementation of these quotas confirmed this. Of the 45 users that were previously consuming 48% of the total storage capacity there were now only 7 users that were seen with excessive storage usage – these users were contacted individually and provided with both assistance in cleaning up their user shares and some increase in their quota to account for role and/or project-specific needs.*

7. Continue to monitor usage by user, both through the Storage Reporter interface and with scheduled "Files Owned by User" reports that target specific users who claim to need a quota increase.

*The company actually saw a month-long trend of reduced storage consumption, as users taking proactive steps to clean-up their own shares. They were able to safely reduce general quota sizes to 750MB, giving a much needed increase in buffer capacity. A parallel project involving evaluation of NAS solutions was indefinitely frozen as it was rendered moot.*

## **CONCLUSION**

A reactive IT organization – one that puts out fires rather than prevents them – is by definition inefficient. Northern Storage Suite is a perfect solution for organizations seeking to implement a systematic approach to storage resource management – once and for all reclaiming control over previously ungoverned storage use.

The first step toward regaining control over storage use is to determine a reasonable and equitable threshold for each user. With Storage Reporter, the publishing company was able to ascertain how many megabytes to allocate per user, and with Quota Server they were able to allow a measure of flexibility in affording a 5% "overdraft" to give users one last chance to reign in their data before they get locked out of the system.

Storage Portal served as an effective communications channel, making users clear on exactly how much storage they were allotted and how much they were using at any given time. The portal enabled IT to further regain control by ceding a degree of control to users -- now that users had the ability to move, archive or delete files to keep within their 750 MB ceiling, IT now had an all but self-maintaining storage management system that freed them up to attend to other pressing tasks.

## #4: SELF-MANAGING STORAGE

**COMPANY:** Healthcare provider with more than 25,000 employees

**CHALLENGE:** IT maintains Windows servers in an expanding 325+ server environment. With a workforce of 25,000 employees, the network's storage capacity, about 1.8 terabytes of user data, was constantly in jeopardy of being overtaken by personal data. While purchasing disk space is perceived to be cheap, this fails to account for the additional management required to perform routine backups and restores, to ongoing monitoring and maintenance.--all of which places burdens on the IT organization, and represents significant added costs.

**SOLUTION:** Three of Northern Storage Suite's five key feature sets were used to achieve this solution: Storage Reporter, Quota Server and Storage Portal. Storage Reporter was used to identify a reasonable upper limit of usage for users (300 MB) and managers (3-4 GB). Quota Server enforced this upper limit and triggered Storage Portal notifications, which kept users abreast of their storage use (when thresholds were met). IT realized a significant decline in help desk calls as the user self-management approach facilitated by Storage Portal made individual data management easy and efficient.

### **POLICY DESIGN AND IMPLEMENTATION:**

The steps described below resulted in an immediate and almost entirely self-driven reduction in storage consumption. The more advanced features of Storage Portal then allowed for more robust and refined self-management: pages were translated resulting in a better understanding among users, Quota Increase Request options were activated to provide a structure to this common process and automatic request handling rules were established for groups with specific needs – allowing these quotas to grow in a controlled manner without direct administrator involvement.

1. The first requirement in this solution is that a process of storage control has been implemented. Storage Reporter should be used to identify a reasonable upper limit of usage for users, Quota Server should be used to set storage quotas based on this figure and Storage Portal should be used to begin to guide users in the management of their stored data.

*Such a process would achieve immediate results, both in terms of reduced storage use and in terms of the level of involvement by administrators in day-to-day storage management – users, who are best placed to determine the true value of their files, would begin to take responsibility for their stored data. The implementation and results of such a solution are described in Scenario #3. This self-management can be further encouraged by extending the organization's use of Storage Portal.*

2. First ensure that users fully understand what their Storage Portal pages provide. Broadcast information about what the different file listings are and how they can be used.

*It is impossible to ask a team of administrators to judge the importance of each individual user's files – to ask them to clean-up the users' shares. By*

*showing their users that they are the only ones who can streamline their own storage use, and by prompting this action with Storage Portal's Oldest, Largest, Duplicate, Media, etc. file listings the admin team was able to achieve significant reductions in storage use and at the same time take a very backstage role.*

3. Open the text file that provides the source for the Storage Portal interface and translate these texts to match your local language and company vocabulary. Also, replace the Northern logo image with your own company logo.

*Localization in this manner allows for greater recognition among your user population, they feel more comfortable with their Storage Portal and are more inclined to make use of the tools it provides. Following localization of the Storage Portal pages to include direct references to company-specific issues and standards the IT department saw an additional drop in overall storage use of just under 7%.*

4. When a sufficient quantity of buffer capacity is available, it will be possible to introduce a system of quota increase rules. Create a rule that allows the Administrators group the possibility to post requests for a 10% increase every 30 days for instance, or have this request granted automatically.

*A quota is not just a means of capping exponential growth it can also be a tool to allow growth to continue, but in a controlled manner. Through the use of Storage Portal this organization successfully reduced general usage from 76% to 53%. The newly reclaimed capacity can now be made available to those user groups who could make better use of it. The Marketing group's dependency on offline storage completely evaporated when the possibility to claim a monthly quota increase was made available.*

5. To further encourage careful storage use to become a fundamental process for your users, have them add their Storage Portal link to their Favorites. Edit the User's Storage Portal Threshold Level 1 Notification in Quota Server to include the required instructions.

*By taking this step to separate Storage Portal from the user's quota they are no longer prompted to manage their storage only when they reach a quota threshold. Instead Storage Portal is visible and available to them every time they open a browser window – making active storage management a cultural aspect of the organization.*

## **CONCLUSION**

A healthcare organization with over 25,000 employees requires a responsive, resourceful IT staff particularly if it's required to maintain peak network performance across a rather unwieldy enterprise. Northern Storage Suite implicitly recognizes that automation is not a solution by itself, but rather needs to be augmented by a framework that gives users the ability to exercise a modicum of control over their data. Deploying Storage Portal and communicating its value to users reduced aggregate usage by more than 20%. Making the portal even more accessible to end users assures continual self-management, resulting in steadily declining usage

The suite provides a welcome balance: admins can automate what makes sense to automate (setting quotas, running reports, triggering backup routines, etc.) and users have a means of managing and safeguarding their own data via access to a personalized web-based portal. By making SRM automation work in unison with user self-management, the organization's IT group dramatically improved its ability to support a 25,000 strong user population.

## **AFTERWARD**

Storage Resource Management taken as an integrated whole – or as the sum of the solutions described – is more than a tool to manage storage devices or report on file system and database utilization. It is central to your ability to manage, access, and use information.

Assuring that critical information is up-to-date and available on-demand has far-reaching implications for just about every aspect of business. From efficient and responsive customer relations to arming your sales force with the latest information they need to achieve quarterly targets.

By going beyond the theorizing of what SRM includes or excludes, this paper offers an alternative, and more usable definition of SRM. Storage Resource Management shouldn't be defined by the different types of technologies that are, or are not included, but by the real problems that can be solved by the application of a proactive storage strategy – by the ways in which an SRM tool should deliver value.

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## **ABOUT NORTHERN**

Northern is an international software company specializing in the development of reliable, flexible and easy to use solutions for Windows Server Solutions storage administration. The company serves a global market through its two bases of operations, Tampa [FL] and Stockholm [Sweden]. Over 28,000 organizations, in 56 different countries are using Northern software solutions.

Northern Storage Suite, as well as the company's full complement of network administration utilities, is available through resellers worldwide (spanning 86 countries), authorized distributors and from Northern directly. Customers in North America should contact Northern [US Operations] at 1.800.881.4950 or [sales@northern.net](mailto:sales@northern.net). Customer's in other parts of the world should visit Northern's Reseller page on [www.northern.net](http://www.northern.net) to find their local Northern software supplier, or contact Northern [European Operations] at +46 8 457 50 00.