

# **TeraCloud Storage Analytics: The Power of Knowledge**

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TERACLOUD

Storage Analytics: the value of knowing

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# TeraCloud Storage Analytics for Storage Management

Storage spawns where it is needed. This leaves IT to manage many islands of storage devices scattered across the enterprise. Compliance requirements, multimedia-rich applications, unstructured content and a proliferation of databases are pushing IT departments to increase the size and complexity of their storage networks. All of this is occurring at a time when the need for centralized storage management has never been greater.

## Business Challenge

The storage market is chock-full of powerful technologies provided by a number of different companies. Many of their products have been acquired by your organization during the last two years. As a result, one of the biggest problems related to storage management today is that every storage tool comes with a separate management console that needs to be mastered. This means that storage management team members are drowning in a sea of training manuals and the process of documenting simple tasks is becoming more complex and a never-ending chore.

Since the inception of the storage resource management (SRM) market, organizations have sought to identify opportunities to maximize their storage assets. What has been lacking is an efficient means to know how to optimize storage assets. Recently, the industry has refocused its interests in dealing with this shortcoming due to the critical nature of data storage.

## Solution

To address this gap in the storage market, TeraCloud developed the TeraCloud Storage Analytics (TSA) product to provide an analytic solution that improves decision making for storage management. With this capability, storage managers now have a reliable, cost effective, scalable analytical tool for managing storage assets across the entire enterprise from a single view.

Within an 8-hour window following installation, TSA enables users to search, identify patterns and relationships of data usage amid massive quantities of information. Armed with this information, storage managers can now develop innovative solutions and solve strategic and operational problems.

## Value

Benefits our Customers experience from TeraCloud Storage Analytics (TSA):

- ▶ Utilization baseline – TSA identifies performance improvement opportunities by quickly analyzing usage at the device and data usage levels
- ▶ Operational efficiencies – TSA isolates areas where corrective action can improve throughput, offering storage managers an effective means to produce value for their customers by reducing operating costs and/or optimizing storage assets

## TeraCloud Storage Analytics: The Power of Knowledge

- ▶ Valuable insight - for meeting data growth challenges, while driving down operational expenses year over year by optimizing current storage assets
- ▶ Validation process – knowing the storage environment is operating within your storage parameters
- ▶ Reporting - The information gathered is online for queries or can be exported to an Excel spreadsheet for further analysis. Additionally, the content can populate a word document that can be printed, bound into a booklet and presented.
- ▶ Visual analysis - generates graphs and charts
- ▶ Ad hoc user interface – provides a framework that allows each user to customize their view

### Specific Storage disciplines addressed by the TSA tool are:

- ▶ Back up Coverage Analysis
- ▶ Capacity Planning with Trending and Forecasting Analysis
- ▶ Comprehensive Storage Reporting
- ▶ Storage Accountability
- ▶ Storage Analytics
- ▶ Storage Asset Management
- ▶ Storage Capacity with emphasis on Storage Growth
- ▶ Storage Cost Allocation (Chargeback)
- ▶ Dataset Organization Attribute Standardization/Validation

# TeraCloud Storage Analytics for Strategic Outsourcing

The world we live in is very different from even a few years ago. There is a constant need for new ways to store, retain and retrieve data in an environment where vast quantities of data require new computing architectures. Volumes of data growth are unprecedented. This presents a serious challenge for outsourcing companies that were awarded contracts to provide services defined by the customer years earlier.

## Business Challenge

Outsourcers must continue to look for better business processes encompassing IT, cost effective solutions and tools that are easy to use and require minimal staff training. The three stage problem - people, processes and hardware optimization require constant attention. This is particularly true since multi-year outsourcing contracts usually have performance improvements, reduced headcounts and increased customer satisfaction requirements. A critical area for outsourcing firms to address is that of storage management.

Existing storage policies based on asset management software have to evolve from their current state. Many of today's storage administrators have been trained to log and track data volumes, identify who has what assets and how they are being used. Storage management is now being extended to what software is used, which systems were accessed, how data is stored, transferred and used. This gives storage management a new life and set of challenging requirements to meet.

To address this gap in the market, TeraCloud developed the TeraCloud Storage Analytics (TSA) product to provide an analytic solution that improves decision-making in storage management and provides insight into information lifecycle management. Today, speed, accuracy and the quality of data are required to provide an understanding of the storage environment. Accurate and current information is a requirement for resource planning, scheduling of day-to-day jobs and operational planning.

## Solution

- ▶ Simplified storage infrastructures
- ▶ Reduced costs
- ▶ Easier management of storage assets
- ▶ Improved performance, and
- ▶ Accurate data on which to make informed decisions

In many ways, storage infrastructures are still quite archaic. Just look at the way data has been protected all of these years. Technical staffs continue to perform daily 'incremental back-ups' and weekly 'full back-ups' according to schedules, although tapes have become faster over the years and their access times have gotten better. The fundamental way that data has been protected has remained unchanged.

And the results are well known. Miserable backup speeds, horrendous backup reliability. The same goes for restores. With the inception of the storage resource management (SRM) market, organizations have sought to identify opportunities to maximize their storage assets. What has been lacking is an efficient means to know how to optimize storage assets. Recently, the industry has refocused its interests in dealing with this shortcoming due to the critical nature of data storage.

Within an 8-hour window following installation, TSA enables users to search, identify patterns and relationships of data usage amid massive quantities of information. Armed with this information, outsourcers can now develop innovative solutions and solve strategic and operational problems in new and unique ways.

With the ability to extract actionable insights from data, teams working in the areas of infrastructure storage management and disaster recovery can now make informed decisions. To make responsive, informed business decisions, it's not only important to gather and aggregate information, but exploit it through sophisticated analytics techniques for better decision making.

## Value

Within the TSA, advanced formulas and macros allow customers to easily demonstrate the state of affairs within their storage infrastructure. The resulting report, which is both a technical and an executive-level document, accurately portrays the financial impact of inefficient storage management practices.

Benefits our customers experience from TSA for technical operations:

- ▶ Utilization baseline – TSA identifies performance improvement opportunities by quickly analyzing usage at the device and data usage levels
- ▶ Operational efficiencies – TSA isolates areas where corrective action can improve throughput, offering storage managers an effective means to produce value for their customers by reducing operating costs and/or optimizing storage assets
- ▶ Valuable insight - for meeting data growth challenges
- ▶ Validation process – knowing the storage environment is operating within your storage parameters
- ▶ Reporting - The information gathered is online for queries or can be exported to an Excel spreadsheet for further analysis. Additionally, the content can populate a word document that can be printed, bound into a booklet and presented.
- ▶ Visual analysis - generates graphs and charts
- ▶ Ad hoc user interface – provides a framework that allows each user to customize their view

Benefits our customers experience from TSA for outsourcing sales:

- ▶ Bidding tool – TSA is installed one day and provides a detailed assessment of all devices, applications and data usage patterns within (24) hours
- ▶ Up-selling into existing accounts – TSA enables sales and account teams to quickly identify new sales opportunities within existing customer environments
- ▶ Competitive selling – TSA positions sales teams to know more about the new customers processing environment than competitors who have products installed for years

# TeraCloud Storage Analytics for Sales Teams

Global Enterprises (mainframe, midrange) computing solutions demand reliable, low cost, scalable and efficient processing environments. To know whether you are achieving these critical goals requires a breadth of analytical tools that are available from a variety of vendors. All sales teams attempt to find this information through customer interviews. What if there was an option?

## Business Challenge

Over the past decade, corporations have lost the option of whether to invest in technology. Today, corporations from large global enterprises to small-medium sized businesses know that investments in technology are mandatory. As a result, these investments fall under the same criteria used for other corporate assets and are evaluated using the same return on investment analysis.

As a result, IT must provide financial justification and produce objective measures of asset utilization and develop defined operational processes. Complicating this situation, in a world where compliance encourages companies to save everything, emerging standards promise flexibility and control for heterogeneous storage environments. For the sales professional, these conditions produce opportunities for selling to new customers and up-selling current customers. Given the requirements for financial justification, knowing the solution to sell, and being empowered with customer pain points is a competitive advantage.

## Solution

The ability for sales professionals to turn raw data into actionable and useful information is the main goal of TeraCloud Storage Analytics (TSA). The process of performing analysis, cleansing and scrubbing data, warehousing the resulting data and performing other critical database operations is a function of TSA. Time, information and a quick understanding of a customer's processing environment are the new rules for entering the game. Sales teams must maximize the usefulness of information while putting serious limits on the time allowed for collection, collation, and analysis of the data. Often, it requires drawing together fragments of information, gleaned the most from varied content, while squeezing the greatest benefit from the valuable time spent in analysis.

Since the inception of the storage resource management (SRM) market, organizations have sought to identify opportunities to maximize their storage assets. What has been lacking is an efficient means to know how to optimize storage assets. Recently, the industry has refocused its interests in dealing with this shortcoming due to the critical nature of data storage. To address this market gap, TeraCloud developed TSA, the analytic solution to improve decision making for storage management.

Within an 8-hour window following installation, TSA enables users to search, identify patterns and relationships of data usage amid massive quantities of information. Armed with this

information, sales professionals can develop innovative solutions and solve strategic and operational problems for customers. With the ability to extract actionable insights from data, teams working in the areas of infrastructure storage management, disaster recovery and large account sales can now make informed decisions and show 'hard' data that supports customer-buying decisions.

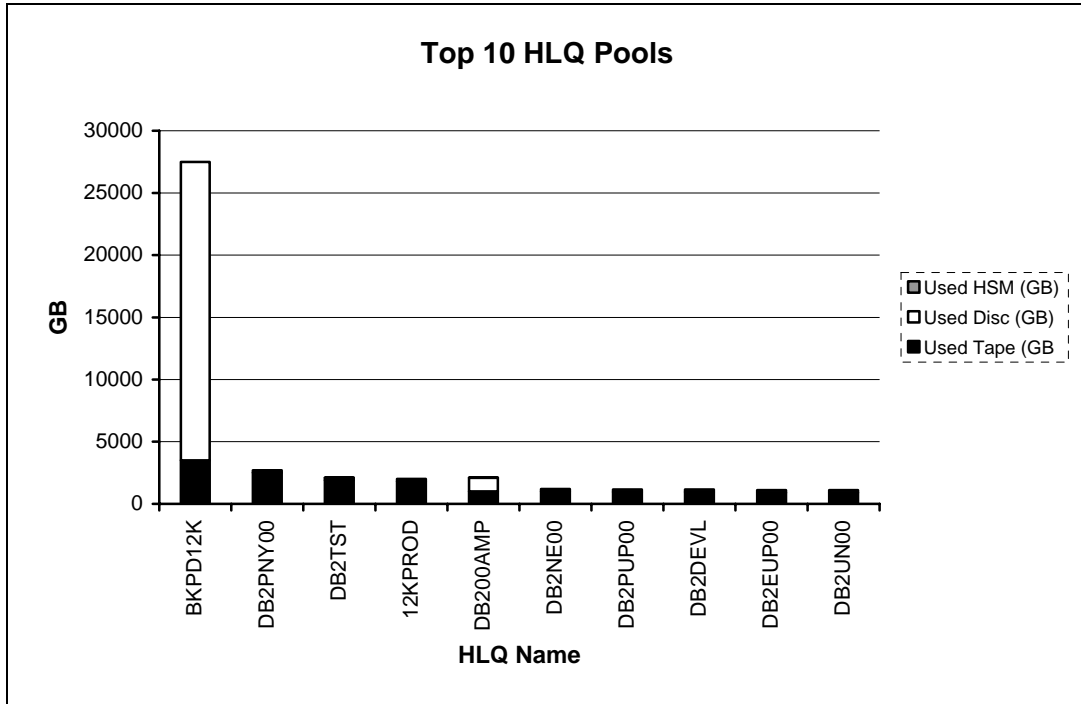
## Value

TeraCloud Storage Analytics (TSA) has the following benefits, for sales teams:

- ▶ Bidding tool – TSA is installed within one day and provides a detailed assessment of all devices, applications and data usage patterns within 24 hours
- ▶ Up-selling into existing accounts – TSA enables sales and account teams to quickly identify new sales opportunities within existing customer environments
- ▶ Competitive selling – TSA positions account teams to know more about the new customers processing environment than competitors who have products installed for years

# Sample DataSet Report

Tracking and managing SMS pools is only a portion of storage pool management. TeraCloud provides unique capabilities for managing pools in a “logical” manner allowing companies to report on data usage across media platforms and in a way that follows the alignment of business units within the organization. As a default, SpaceFinder gathers all High-Level-Qualifiers (HLQ) within the environment and reports all datasets associated with the HLQ residing on DISK, HSM, and Tape. The following shows the Top Ten HLQs within the environment based on the total amount of storage usage across media.



# Sample Best Practices

The following is a list of key optimization issues developed for the storage management industry focusing on implementation of Best Practices.

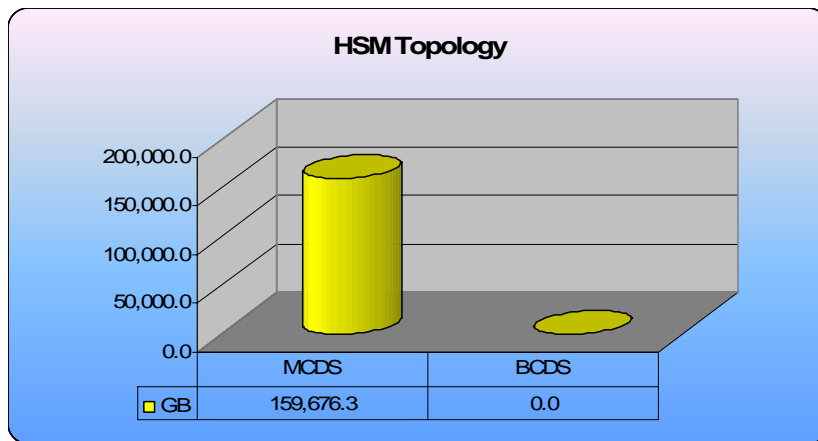
<b>BEST PRACTICE</b>	Maintain overall disk farm utilization at the optimum level to maximize storage assets
<b>FINDINGS</b>	Storage assets are severely underutilized at just a fraction of their potential. SRM tools are needed to increase utilizations by 23%. This would net an additional 6.48 TB in usable storage.
<b>BEST PRACTICE</b>	Manage SMS pools to allow active data to reside on disk when needed. Speed batch processing through positioning of data on disk thus eliminating recalls from HSM migration levels or tape mounts while optimizing storage.
<b>FINDINGS</b>	The Top 10 SMS pools show signs they would benefit from automation. Of the top 10 pools, the average utilization was just 70%.
<b>BEST PRACTICE</b>	Maintain a high Core Utilization rate to maximize the storage investment and extend the current assets. , Combine idle storage, allocated but unused storage, and subtract the result from the total storage to determine the core utilization rate.
<b>FINDINGS</b>	The Core Utilization was found to be extremely low at 45% and warrants a full evaluation of utilization rates as well as allocated but unused storage. An SRM tool is required to affect a significant impact.
<b>BEST PRACTICE</b>	Maintain an indexed VTOC for better system performance. Volumes without Indexed VTOCs slow system performance and, in the case of SMS, provide erroneous allocation information that may further degrade system performance.
<b>FINDINGS</b>	32 volumes were found to have no Indexed VTOC or the Indexed VTOC has been disabled.
<b>BEST PRACTICE</b>	Move management of disk volumes under SMS to eliminate volume segregation. Volumes with less than 30% utilization are a major indicator of SMS opportunities to extend and optimize assets.
<b>FINDINGS</b>	2130 volumes are currently under 30% utilization. Under utilized volumes are prime candidates for automation tools allowing monitored volumes to be used to their maximum storage potential.

# Sample DFSMShsm Analysis

This portion of the analysis is performed using the **Total Recall** feature of **SpaceFinder**. The Total Recall feature provides a full function interface to DFSMShsm in order to aid day-to-day manipulation as well as report on HSM activity and resource consumption at both detailed and summarized levels.

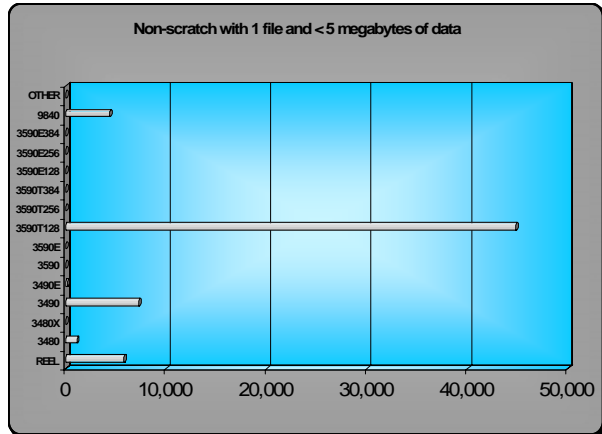
DATA POINT DESCRIPTION	# DSN	TOTAL OF DATA
Migrated Datasets GT 1 year and never Recalled	84,864	3.04 TB
Datasets recalled on same day they were migrated	0	0 MB
Total Number of MB for Lvl1 Datasets GT 1 year and never Recalled	0	0 MB
Total Number of MB for Lvl2 Datasets GT 1 year and never Recalled	84,864	3.04 TB
Number of Migrated Rolled Off GDGs	344	36.28 GB
Total Number of MB for Rolled Off GDGs	0	0 MB
Total Number of MB for Lvl1 Rolled Off GDGs	0	0 MB
Total Number of MB for Lvl2 Rolled Off GDGs	344	36.28 GB
Total Number Datasets Recalled > than once within 7 days	0	0 MB

The following chart indicates the amount of data DFSMShsm was managing in the SYSE - Vision environment at the time the analysis was performed.

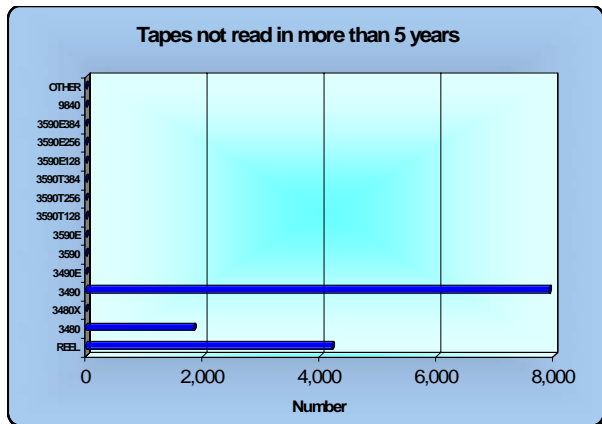


# Sample Tape Reports

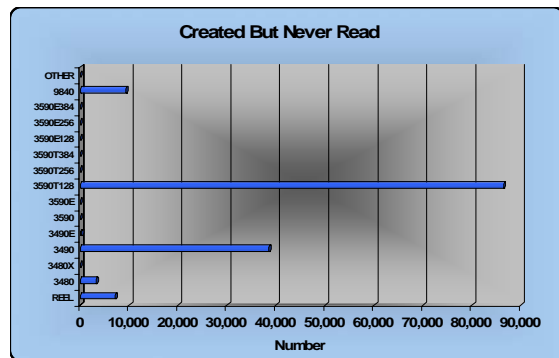
SpaceFinder analyzed the tape catalog and determined that a number of volumes exist within the tape environment that have very small amounts of data residing on them. These are opportunities to optimize tape resources through consolidation of similar characterized files onto a smaller set of cartridges and higher density media. These files would also be great candidates for a virtual tape solution.



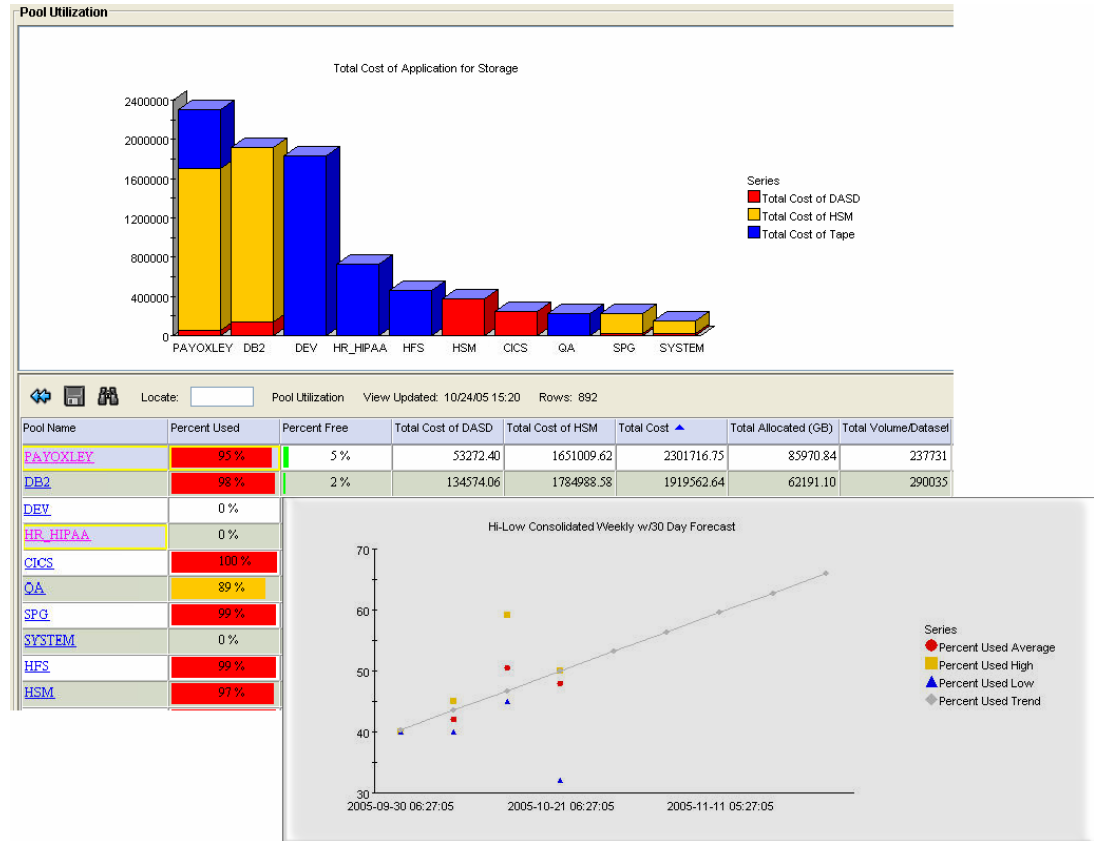
“Tapes not read in more than 5 years” is an often-ignored category of a company’s tape inventory. The risk factor here is degradation of physical media. Even though technology advancements have improved magnetic retention times on tape, experts still agree that data retained for this long without refreshing it to newer media can increase the risk of data not being retrievable or corrupted during retrieval.



“Created But Never Read” is a category of tape volumes that can indicate data used once for temporary purposes but not valid after the day of creation. Programmers who need temporary space but use old JCL with long retention periods specified can unwittingly churn resource consumption that causes unnecessary purchases of additional cartridges.



# Sample Reports



## About Us

TeraCloud storage-management solutions provide a comprehensive space-management, capacity planning, and data-management solution for mainframe and heterogeneous storage environments including consolidated mainframe and enterprise-wide monitoring, detection, analysis, and automated resolutions for DAS, NAS, and SAN environments.

This helps our customers centrally manage and control their data center storage as a strategic asset. Our mission is to help you optimize your data management practices and environment by delivering storage inventory solutions that are easy to use. With comprehensive storage management solutions to monitor, detect, analyze, and tune your storage inventory, TeraCloud keeps data and applications available in the most economical way, letting you save time, save money and regain control.