

# Role of Analytics in Infrastructure Management



TERACLOUD

Storage Analytics: the value of knowing

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# Overview

Understanding the performance drivers of a corporation's technical infrastructure requires real-time, comprehensive insight to pinpoint problems and identify potential solutions. Achieving this kind of information requires the next-generation analytical tools. To date, there has been little regard for the role that the corporate infrastructure can play in creating a highly responsive and agile corporation. The purpose of this paper is to address the role of analytics in managing the technical infrastructure to sustain operational alignment with changing business needs.

Traditionally IT organizations have focused on providing better IT asset utilization, return on investment (ROI), and faster implementation of new systems. The varieties of hardware, operating systems, middleware products, languages and data storage devices create an environment where accommodation of heterogeneity is fundamental to systems management. Over the years, multiple computing architectures have produced a level of complexity that now confronts all IT organizations.

Powerful new technologies provide partial answers to the lack of a consistent architecture enabling applications to be rapidly developed, integrated and reused. The daily challenge is to find a way to manage scarce resources effectively and efficiently to support on-going business requirements while providing a responsive environment. Given the velocity of change, most IT organizations are unable to address the demands for agility and flexibility in the technical infrastructure. As a result, many corporations find themselves constrained due to:

- ▶ Inability to leverage data across existing systems: Enterprise systems typically have their own business processes, use their own business rules and logic, and rely upon their own security.
- ▶ Increased maintenance costs: Many applications must be maintained by experienced, highly specialized skill sets.
- ▶ Demand for increased capacity which drives more complexity

To address these issues, many companies connected internal departments, customers and partners to mainframe systems through a series of stand-alone applications and B-to-B interfaces. They soon found that these 'one-off approaches' increased complexity of the environment and were not cost effective. Seeing the wisdom of a modular approach, other business units quickly followed suit resulting in multiple, parallel applications on dedicated hardware assets causing different platforms and technologies in the data centers. When each application group manages their technical designs and infrastructures needs, projects drive acquisition of core infrastructure assets or components. The goal is to develop a solid technical underpinning that would let companies break services down to reusable components that would reduce overall development efforts and allow the infrastructure to be more manageable. Fundamentally new approaches to integrating and managing such components must be found.

Consolidation solutions that maximize asset utilization and lower total cost of ownership are in high demand. The normal approach is to consolidate or reduce the number of data centers, as well as servers, storage devices and operating systems within each data centers. At this time, due to increasing costs and complexity of the environment, data center operations are looking to consolidate numerous underutilized servers and storage devices.

Server consolidation helps clients replace most of their distributed servers with a smaller number of centralized servers. This effort enables clients to achieve a 30 to 50 percent reduction in total cost of server ownership according to studies performed by Accenture. In addition to cost savings, server consolidation leads to increased server reliability and availability. Storage consolidation transitioning to networked storage helps to eliminate duplicate environments and maintaining older more costly devices. The result is improved storage utilization, optimizing data consolidation and generating cost savings. Large organizations have saved tens of millions of dollars during the first year and reduce their total cost of ownership by 30 to 55 percent, according to Accenture studies.

Consolidation of servers and storage devices has demonstrated financial savings and improvements in application performance. To accomplish this task, many companies hire consultant to conduct an in-depth assessment to determine current application performance requirements and storage needs and to baseline costs.

# Consolidation versus Rationalization

When companies use analytics to baseline the operational demands on their assets, they are in a position to accurately determine patterns of usage. Many organizations decide to consolidate devices while looking at performance data only at a macro activity level. That is, percent of asset utilization over a specified timeframe. Often due to a lack of detailed information, they incur additional risks in determining how to reduce the number of devices and maintain sufficient capacity. Due to budget, time constraints and lack of automated tools, there is an inability to address these data and user usage patterns. For purposes of this discussion, rationalization is defined as consolidation driven by business usage patterns. It is critical to take into account the business usage requirements when planning and developing the strategy for consolidating devices.

Rationalization is a powerful technique to free up valuable resources and simplify operations. By focusing on high valued business systems and understanding data usage patterns, rationalization produces cost benefits and drives business value more than consolidation. While consolidation has many of the same techniques and activities, it is performed with 'no or limited' regard to the users of the systems and how the technical assets support those users.

From a storage administration perspective, data lifecycles and technical asset utilization can be tracked, monitored and reported on from a single view. Companies are now enabled to uncouple applications from physical servers and storage devices, thereby producing fewer management points. It has been long recognized that a single point of management for servers and storage is far better than current methods. This information can now be used to provide an analysis of the technical environment and produce reports that will enhance decision-making.

# Charting a Course for Gaining an Understanding

While the data center infrastructure must be scalable and highly available, it should still be simple to operate, troubleshoot and easily accommodate new demands. In attempting to gain these efficiencies and become more effective, companies face many infrastructure challenges, including:

- ▶ How to ensure existing servers and storage devices are being fully utilized
- ▶ How to reduce the high costs of managing many disparate systems
- ▶ How to determine the right solution to position for future growth

Analytics enables infrastructure management teams to monitor the processes being executed, devices providing the services and levels of usage from a variety of different perspectives. Being able to track data patterns at the application and devices level enables management teams to proactively make changes when needed and know the impacts of those changes. Analytics can now be viewed as providing a foundation upon which to introduce more technically sophisticated approaches to changing business requirements.

Businesses will change their rules to adapt, processes will change to become more streamlined, security needs will evolve and organizations will have to adjust their reporting and auditing procedures to comply with new laws. These new levels of complexity stem from many conditions and IT departments are expected to wrap their arms embrace all of these changes. This has created a management challenge beyond anything we have yet encountered in IT. Using analytical tools, organizations can:

- ▶ Increase efficiency
- ▶ Drive better business decisions
- ▶ Process more accurate information
- ▶ Adapt to changing business needs
- ▶ Improve resource utilization

The corporate technical infrastructure is a complex environment, supporting multiple missions and requiring increased productivity. Economic demands for improved cost efficiency, ROIs for technical investments and the ability to scale to an undefined capacity creates an unbelievable challenge for the technology organizations. These demands are occurring against a backdrop of an environment that must be agile, pro-active and increasing support the execution of business processes and requirements.

New architectural requirements call for network-centric and modular design technical environments, which are becoming more complex than current environments used in most Global 2000 organizations. This situation requires improved manageability and tool sets for managing these developing environments. Therefore, storage analytics provides organizations the ability to develop well-defined strategies for managing the growth and complexity of the technical infrastructure.

# Visibility into Your Storage Infrastructure

Ever 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 gap in the market, TeraCloud developed the TeraCloud Storage Analyzer (TSA) product to provide an analytic solution that improves decision making in storage management. Today, speed, accuracy and the quality of data are required to provide an understanding of the storage environment. This is a requirement for accurate resource planning, scheduling day-to-day jobs and tactical operational planning.

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, users 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, disaster recovery and large account sales teams can now make informed decisions. To make responsive, informed business decisions, it is not only important to gather and aggregate information, but exploit it through sophisticated analytics techniques for better decision-making.

TeraCloud provides the TSA to enable knowledge-discovery, similar to data-mining solutions that produce business intelligence (BI). This information can help you answer your critical corporate storage challenges. Using TeraCloud's analytic solution, that runs along side other applications, allows your business to dynamically mine for data continually and transparently without disrupting the production environment. With less administrative overhead and running real-time, TSA saves time, money and resources while improving decision-making.

TSA has the following benefits, as stated by TeraCloud's customers and evaluators:

- ▶ Provides valuable insight for meeting the data growth challenges such as IO performance, disaster recovery, capacity planning, and backup environment
- ▶ Quickly assists in answering the questions:
  - Where does data belong?
  - What are the data retention requirements?
  - What is the service level for data at points throughout the life cycle?
  - How do we back it up within our window?
  - How do we plan for unpredictable growth?
  - What changed and why?

## Benefits of TSA

- ▶ Provides a validation process of how well your storage environment is operating and identifies opportunities for tuning
- ▶ Reporting - The information gathered is online and allows for queries or translated 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.
- ▶ Seamlessly bridges storage data, analytics and historical data into a single application
- ▶ Historical performance analysis
- ▶ Field by field audit trail
- ▶ Graphs and charts incorporated into standard reports
- ▶ Ad hoc user interface framework allows each user to customize the application to display and report information
- ▶ Easy-to-use interface

## Specific Storage Disciplines Addressed by the TSA Tool

- ▶ 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)
- ▶ Storage Virtualization
- ▶ VSAM Reporting

## How Customers use TSA

- ▶ Bidding tool – TSA is installed one day and provides a detailed assessment of all devices, applications and data usage patterns within (24) hours with limited overhead
- ▶ Up-selling into existing accounts – TSA enables sales 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 been installed for years
- ▶ Performance baseline – TSA can rapidly identify performance improvement opportunities calling for organizations to plan the need for additional hardware
- ▶ Operational efficiencies – TSA isolates areas where corrective action can improve throughput, offering site managers a quick means to produce value for their customers and position the storage team to reducing operating costs and/or improve efficiencies

## Conclusion

Time, actionable information, and knowing the impacts of today's decisions on tomorrow's problems are precious commodities. The rules of the game have changed and managers are not afforded the time to study a situation properly before taking action. As a result, we must maximize the usefulness of information at hand while putting serious limits on the time allowed for collection, collation, and analysis.

In this article we have identified how visibility into the technical processing environment from a storage management perspective, provides a new tool set that is currently available to infrastructure management teams today. TSA is a tool that will assist both administrators and management teams to draw together fragments of information, gleaning the most from analytical data and gaining the benefit of informed decision-making. This can only be achieved through a continuous capture of performance data, allowing management to understand the problem before they attempt a solution. With TSA, corporations can meet the challenges of the new data center environments by prescribing the proper prescription because they have accurately diagnosed the problem and will therefore avoid malpractice.

## 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.