glassbeam™

Top Tier Storage Systems

A top tier storage systems is a leading provider of next-generation storage solutions for Fortune 500 enterprises. It's flagship product line NS100, a high-end disk system for business critical environments, has been deployed at over 4000 customers with 40000 systems in the field all sending back data.

Overview

Industry

• Storage systems solution provider

Challenges

• Large volume and complexity of data (over 100GB a week)

• Cumbersome scripts to analyze highly complex data

Solution

• Machine data analytics as software-as-a-service solution

• Actionable intelligence from Glassbeam Dashboards

• Glassbeam Workbench identifies patterns and metrics on hundreds of parameters

Impact

• 95% of all customer inquires resolved at 1st stage of inter-action

• Comprehensive evaluation of customer systems and sites' health

The Challenge

One of the key tasks for the product management group is to understand how products are performing in actual customer environments, to ensure the highest quality and customer usability, and to leverage that knowledge to improve the next generation of products.

Like product managers at most companies, the team at Top Tier Storage (TTS) tried to understand customer usage through traditional methods such as customer surveys, feedback from sales teams, and records of calls to customer support. But they had another – a comprehensive, ongoing repository of configuration (log) information known as Product Information from Logs (PRIL).

Every week each of the 4000+ NS100s in the field feeds a stream of data to TTS. This data could potentially be stored in a data warehouse containing up-to-date information on the type and size of drives, cache size, performance statistics, and much more.

There was just one problem: there was no cost effective way for the TTS team to easily parse and analyze this multi-structured data. Looking to handle this internally, TTS tried to analyze the PRIL

data using a combination of custom internal scripts and an Oracle database, but soon found that it was unable to handle the large volume and complexity of data (around 100GB a week) and present the results in a way that was easily digested and understood. Each time a new set of information was requested, a new data set had to be created, a step requiring up to eight hours.

If someone wanted disk serial numbers, for instance, and someone else wanted cache information, the requests had to be run separately. The team was continuously in reactive mode. Besides simple reporting on mined data, the group also wanted to perform advanced analytics to identify patterns on metrics such as part failure rates.

They had hypotheses on why disks might fail with certain configurations, but had no precise way to identify exact correlations. What the team needed was a highly scalable solution that offered easy, rapid access to data through an intuitive graphic user interface. Building a solution of its own would be a large and costly undertaking by its IT staff.

The Solution

Following up on a recommendation by an analyst firm, the TTS team contacted Glassbeam, the first company to provide a software-as-a-service solution for turning large volumes of machine data into actionable business intelligence. Following a successful pilot project, TTS selected Glassbeam to create nearly three-dozen dashboards for reporting and analytics. One of the Glassbeam dashboards, for example, provides details about the number of software upgrades implemented in the field (Figure 1).
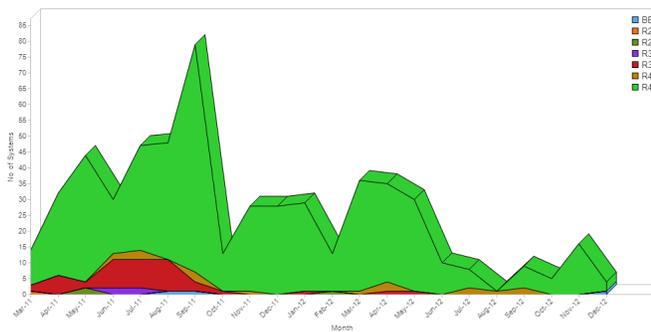

Figure 1

This is important for TTS to understand, as each upgrade adds to warranty/support cost. Understanding the reason for upgrades helps TTS improve product quality, reducing the need for upgrades. Another Glassbeam dashboard enables the TTS team to understand what host operating systems are working with the NS100 storage devices (Figure 2). Knowing this helps TTS focus its product development and quality assurance resources on the most popular host operating systems.
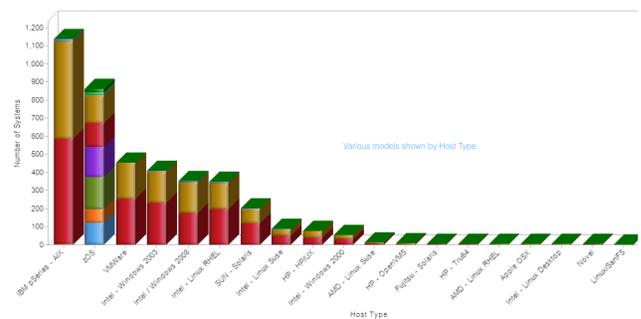

Figure 2

Complementing the dashboards is the Glassbeam Workbench, a graphical user interface that allows any member of the TTS team to select any combination of system statistics, state, and configuration parameters and see how they are distributed. Users also export data into Excel spreadsheet for further data mining.

Glassbeam provides an extraordinary richness of PRIL data, allowing the NS100 team to investigate relationships among more than 700 attributes.

The Impact

The impact of the Glassbeam application is producing benefits in at least four areas – greater productivity, enhanced understanding of how products are used, better customer service, and improved account management.

Greater Productivity

Any TTS team member can use the Glassbeam application to get a response to a query within a minute, not the eight hours it used t take. In addition, product field engineers are now resolving about 95% of all customer inquires at the first stage of customer support, as opposed to less than one-third of cases before the Glassbeam application was installed.

Enhanced Understanding

Glassbeam is also helping with predictive analysis. An early warning system for disk replacement has been created, which automatically alerts the TTS team if a newly released product experiences an abnormal level of defective disks. Rather than learning about a problem from customers, the TTS team is able to use the Glassbeam application to take proactive corrective action.

Better Customer Service

Much of the machine data analyzed by the Glassbeam application is of use not only to TTS but also to users of the NS100. The TTS team is preparing a subset of Glassbeam reports and resells them to NS100 customers as a "health check" of their systems.

These reports are highly flexible, with various filters on system names, site names, date ranges, and any other specific information that could be dynamically altered to render new query results. The packaged information is comprehensive, ranging from health of the customer systems and sites (performance, capacity, throughput, energy efficiency) to support and case history-specific information (cases opened, closed, error rates).

The Impact

Improved Account Management

One of the metrics tracked by Glassbeam applications covers storage licenses. Each NS100 system is sold with a license for a specific amount of storage. A Glassbeam report can flag systems that have exceeded their license. Such a report not only helps detect violations but also brings in additional sales revenues by proactively identifying up-sell opportunities for additional storage licenses.

By itself, Glassbeam is a powerful solution. When combined with TTS's internal systems and knowledge-bases, Glassbeam becomes even more powerful in allowing TTS to turn its huge warehouse of multi-structured data into meaningful and actionable business intelligence, benefiting the entire company.

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