# glassbeam™

MAXIMIZING VALUE AND ROI FROM MACHINE DATA ANALYTICS
Glassbeam Increases Productivity, Improves Revenue

This report was recently compiled by an independent consultant by surveying and interviewing over 90 end users at a Fortune 100 client of Glassbeam that has been in production for over 3 years across different use cases for support, services, sales, marketing and engineering functions.

In this new era of big data, sensors can be included in almost everything made. The "Internet Of Things" can generate mountains of data with the exciting potential of being turned into invaluable information. As a vendor, if you make a product or solution that, when deployed by your customers, produces detailed data streams about its ongoing status, condition, activity, usage, location, or practically any other useful information, you can now derive deep intelligence useful for improving your products and services, better satisfying your customers, improving your margins, and growing market share.

For example, rich information about a customer's usage of your product and its current operating condition, combined with knowledge gleaned from all of your customers' experiences, enables you to be predictive in identifying possible issues for support and opportunities for sales, and become proactive about addressing them. Not only can you know more about a customer's implementation of your solution than the customer himself – improving the customer's satisfaction and your account revenue generation – but you can now make strategic and ultimately competitively differentiating decisions about new markets, services, and business capabilities based on hard data.

In this report we will look at areas where value can be generated from this big data and the various approaches available. In that context, we will look at the unique SaaS solution provided by Glassbeam through their SCALAR service. We'll analyze the potential ROI offered by Glassbeam by reviewing the real world problems that are tackled, the tactical operations that are improved, and the strategic opportunities that can be developed. Throughout we will show that Glassbeam not only effectively improves staff productivity, but also generates significant revenue enhancement through improved tactical customer facing service and account operations and strategic product management and portfolio optimization.
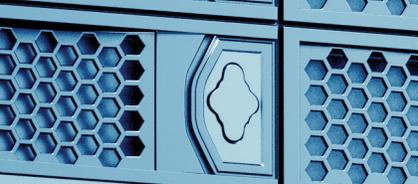
GAINING INSIGHT AND ADVANTAGE FROM CUSTOMER DEPLOYMENTS

When your products and solutions are instrumented to produce interesting streams of data on some recurring basis about themselves (status, configuration, health) and how they are being utilized (behavior, activity, performance, et.al.), the real challenge isn't as much to collect the low-level data into one place (as "call home" file streaming or transfer is readily accomplished) as it is to process it across all customers and implementations into useful, decision-impacting, business-related intelligence. Today's complex systems, like storage arrays or data protection suites, generate complex, multi-structured bundles of data files, quickly growing to Petabyte scales.

For vendors, the instrumentation and call home steps have been "no-brainers" to implement in recent generations of product, but deriving tangible value from the volume of data collected has been left to the extra-talented support or IT guy who might be able to write a one-off script to look for a specific "needle" in the proverbial haystack. Alternatively, we see many attempts that extract only a small subset of the more structured configuration information into a single-purposed and ultimately inflexible "lookup" database for support or sales reference. This leaves tremendous value untapped.

Ideally, we'd like to unlock all the information and insight in those streams of data on a large scale (for all customer implementations) and in an intelligent way so that multiple users and business functions continuously benefit. When this value is multiplied across the organization the payback can be huge, and we will look at some details and examples in later sections of this report. At a high level this can directly impact both the cost of doing business as well as the revenue potential of the business:

▶ **Lowered Costs –** Productivity improved in support and operations, engineering efforts efficiently prioritized, product and portfolios optimized

▶ **Increased Revenue –** Accounts better served and targeted by sales efforts and marketing programs, channel leverage increased, products and services improved, new revenue opportunities created

If processed in the right way, data being fed back from the field can assist and inform almost every business function – support, services, sales, product management, engineering, QA, field marketing, corporate marketing, business development, channel management, and even executive decision making. And Glassbeam's solution offers a customer/partner-facing portal option that extends the data's value back upstream providing an additional source of revenue.

NAIVE APPROACHES

When it comes to thinking about the rivers of information laden big data available to us, the question is no longer "if", but "how" to take best advantage of it. Often the first approach is to try to build something internally. In our research we commonly see three types of home-built solutions:

▶ **Scripts and spreadsheets –** Individual experts culling small subsets and isolated data points from only the most recent data into a myriad of adhoc spreadsheets. Unfortunately, such low-level attempts at big data mining are inefficient, myopic, static, extremely limited, fragile, and can produce inconsistent and misleading results.

▶ **Adapted BI –** Automating ETL (Extract Transform Load) on incoming streams and loading structured
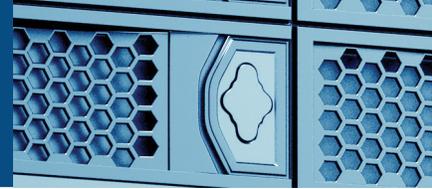
subsets into a variety of BI and BI-like solutions (i.e. "logfile analysis" tools). BI solutions developed organ-ically in--house tend to be fragmented with multiple static and constrained tools each limited to a specific tactical use case. Worse, they can quickly become an expensive burden to build, operate and evolve.

▶ **Do-It-Yourself Big Data –** A naive approach is to attempt building your own big data platform analysis and reporting. The DIY route can be hard, time-consuming, costly, full of risk, and end up not being very capable or agile. When a company pursues their own custom solution they don't gain any efficiencies from learned best practices and experience nor the benefit of a consistent, elastic subscription cost basis.

KEY POINTS TO REMEMBER

We can add a few important points when considering the best approach to take:

▶ **Business focus –** The people who can best use the information are business users that are not necessar-ily IT-skilled (for example, marketing, support, and sales). Reports and analysis must at the same time be designed for business value and agile in adaptation.

▶ **Nothing is static –** The solution must be capable of quickly handling dynamic changes to in-coming data formats, or large histories of valuable data could become inconsistent (i.e. use-less) over time.

▶ **DIY is for hobbyists –** Ultimately, professional enterprise--grade services are built by those who specialize in them. This is something every solution and product vendor already knows about in their own market. If it's not core IP, you don't want to be building it.

GLASSBEAM SCALAR

Ideally a SaaS based solution would provide the best of all worlds – quick time to value, highly scalable, lev-eraged expertise embedded in best practices solutions with low friction adoption, and available as a no-risk elastic subscription. This is where Glassbeam sees a big market opportunity.

Glassbeam SCALAR is a cloud--hosted platform for hyper--scale machine data analytics. SCALAR delivers a new approach to getting value out of large histories of multi--structured data streams. In addition to the expect-ed data mining and analytics, SCALAR includes the new front--end Glassbeam Explorer that provides full text and parametric search (pre--parsed searches), an event viewer to find and explore matches, and a "diff" facility to easily spot what might have changed over time in large file sets.

As a "hyper--scale" cloud--hosted service, Glassbeam is designed for high volume ingestion with parallel asynchronous loading (a private cloud version is also available) and easily handles PB's of data per client. Un-derneath, the core data ingestion service supports dynamic parsing of incoming files based on a sophisticated "SPL" extraction language and an inherent context--awareness that stitches together information from multiple files, formats and time intervals. For example, when even one storage array product can produce 80+ unique report sections across multiple files, with many versions each over many releases over years, this becomes a critical capability.

Glassbeam has also worked hard to internalize all the object and data modeling necessary to enable sophisti-cated analytics, exploratory data mining, and even standard reporting by business users. Much of Glassbeam's design provides the business analyst with direct access to intelligence without forcing them to write techni-cal-level data queries. SCALAR includes Glassbeam Analytics that offers a customizable dashboard–like analy-sis and reporting for profiling customer deployments and managing performance, capacity, and license/product

metrics over time. SCALAR also supports API integration to BI and other enterprise applications.

A key opportunity vendors have with Glassbeam is to additionally offer an OEM branded analytical interface back to their individual customers so they can analyze their own information. This access can also be valuable to channel and business partners to help them maximize assigned accounts.

JUSTIFYING GLASSBEAM ROI ACROSS THE ORGANIZATION

It's relatively easy to imagine how a support organization can improve customer satisfaction with ready access to each customer's configurations, current status, history of experience, and so on. However, support is only the tip of the iceberg of value available. Let's walk through some of the key areas of ROI that a broader adoption of Glassbeam provides to the well--informed, efficient, and profitable organization. As a general outline, there are three main areas of benefit cutting across business units:

▶ Outstanding customer (and partner) engagement

▶ Tactical operations productivity

▶ Competitive corporate strategy

OUTSTANDING CUSTOMER ENGAGEMENT

When every business unit that touches a customer has access to the same, consistent, current, and deep data about that customer's implementation, the customer comes to feel that the vendor cares deeply about them. A good organization can avoid situations where they might otherwise waste both theirs and the customer's time on support, service, and sales calls.

Taking it to another level, organizations can become proactive regarding trending issues that can now be spotted across all the deployed versions in the field. Glassbeam tracks dynamic configurations (serial numbers, firmware levels, etc.), provides an easily navigated drill-down model of complex products as currently deployed, and can identify trending issues and errors at levels including component, system, account, or customer segment.

KEY SURVEY RESULT – MAJOR ACCOUNT SUPPORT Over 75% of Glassbeam users across both product and field operations reported using Glassbeam actively to solve customer issues in order to provide proactive support.

Better engagement helps the organization look and act professional, increases customer satisfaction metrics, and lowers certain support costs. But proactively solving issues, shipping the right components the first time, or making sure that things are deployed as expected also leads to higher retention, referral, cross-sell and up-sell rates. It may be difficult to map an increase in customer sat with a direct increase in revenue, but we note that just tracking license compliance and notifying account managers (or channel partners) at the right time will have a directly measurable revenue impact.

Much of what goes into establishing a brand's reputation concerns ensuring outstanding customer engagement. And branding can ultimately make or break a business unit or company entirely.
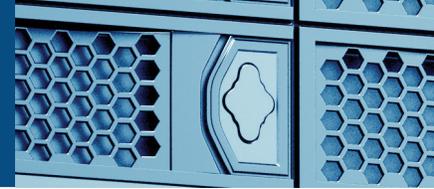
KEY SURVEY RESULT – UP SELL & EXPANSION 10% of respondents, about 45 users, (mainly support, services, and engineering) indicated that Glassbeam information resulted in a new sale or upsell of a current account. While anecdotal, one respondent identified a $10M sale as a result of Glassbeam information.

TACTICAL OPERATIONS PRODUCTIVITY

Looking internally, providing ready access to actionable client information that is not only current but also spans multiple years of history increases operational productivity across business functions. Glassbeam users report that they are more efficient (not just more effective) at their jobs on recurring internal tasks (configuration analysis, summary reporting, case reviews) but also on highly visible, critical tasks like "time to identify and resolve issues".

KEY SURVEY RESULT – PRODUCTIVITY 80% of respondents said that without Glassbeam their job would take 10% or more time (half of those actually said 20+%). For the almost 500 Glassbeam users, that conservatively equates to saving over 50 FTE's. At an estimated FTE cost of $150k, that's more than $7.5M in annual labor savings.

For example, pulling up a delta analysis in Glassbeam over an account's recent history can immediately show where and when changes have been made or crept into their systems, directly pointing out potential root causes of any issues. In addition to helping staff be more productive – which for a large organization quickly adds up to significant labor savings – we noted in user interviews that Glassbeam users tend to have a better appreciation of the company's overall customer engagement cycle, a better understanding of their role in the larger organization, and take pride in doing a better job whatever that job may be.

COMPETIVE CORPORATE STRATEGY

At a strategic level, Glassbeam naturally aggregates big data across all clients. By analyzing at this level, decisions can be better made about steering resources (e.g. engineering, QA, business development…) towards properly prioritized goals. On the engineering side of the house, product management can make informed decisions about development directions based on actual usage patterns. They can analyze what percentage of the install base uses which features, chart any cycles or seasonality, understand adoption and sun-setting rates, etc. Getting just one key decision nailed on how long to support a given product version can save incremental money internally in development but could be valued externally in the tens of millions of dollars of impact downstream in retention, expansion and new adoption success.

KEY SURVEY RESULT – PROACTIVE PROBLEM SPOTTING One interviewee leverages Glassbeam's dashboards and reporting to help associate reported problems with the actual system microcode populations deployed in the field (out of potentially hundreds of possible versions). About 10 times a year he finds a concerning trend that could affect a significant segment, and this allows engineering to be proactive with development, field actions, and communications with customers.

We can't easily quantify a potential crisis that is proactively averted, but the cost of just one major account going down resulting in an all out firefight would form a good estimate. This user was sure that the company has saved many large customer accounts by being proactively enabled with Glassbeam.

Outbound marketing and sales functions can leverage Glassbeam analysis of customer behavior to help design targeted campaigns and broader marketing efforts, and business development can analyze deployment profiles to build fine-grained partner programs. Glassbeam can help identify sets of accounts where certain features are or aren't being used in conjunction with others, where usage is growing or declining, or where unvalidated components are creeping in. For example, Glassbeam might help a storage array vendor understand the
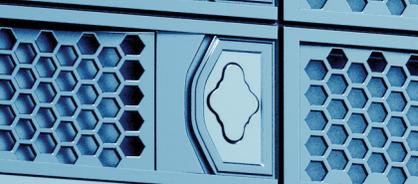
patterns of flash/SSD adoption or the correlation of data protection features with certain tiers and capacities of storage to identify rich go-to-market opportunities.

As a final example, purchasing departments can leverage aggregate data on OEM component performance when negotiating with suppliers. Having actual supplier-by-supplier failure rates for something like disk drives can help drive favorable terms and conditions with big dollar impacts.

LOWERED COSTS, INCREASED REVENUE

We've just reviewed several ways Glassbeam's approach lowers costs through increased productivity at the worker level, and through more efficient, optimally prioritized and aligned engineering and marketing at a strategic level. Similarly, we've identified a number of ways that Glassbeam adoption enhances revenue by helping those same business activities and functions be more effective – better account selling, more relevant engineering, and targeted marketing.

We'd like to highlight one more financially rewarding benefit that we noted in our analysis. A team-wide adoption of Glassbeam seems to help everyone pull together with shared, consistent, up-to-date information. It may be hard to measure, but we believe having empowered, coordinated people increases initiative while reducing argument and dissension. Getting the whole organization to share the same big picture can be, as they say, "priceless".

KEY SURVEY RESULT – **IMPACT ON PRODUCT ENGINEER** We interviewed a Product Engineer, one of 23 in the US, who routinely helps big customers with post sales support with leading banks and telcos. One of his major activities is ensuring that remotely initiated processes complete as they are supposed to, and having Glassbeam serve up timely account data is key to saving both his and his customer's time. He claims Glassbeam easily saves him 15–20% of the time he used to spend per account.

EXTENDING AND INCREASING THE VALUE

In this final section, we'll look at a few ways in which the ultimate ROI of Glassbeam can be further extended and enhanced.

CROSS PORTFOLIO SYNERGY

For larger companies with multiple product lines, implementing Glassbeam concurrently on families of related solutions, if not the whole portfolio, extends the tactical value but magnifies the strategic value. Essentially, the value of the analysis and reporting multiplies exponentially with the number of product lines covered for which a given customer segment might have implemented at the same time.

For example, even though product line A and product line B might have separate support, engineering and marketing teams, at a corporate level there are strategic decisions about branding, messaging, marketing programs and the portfolio mix that can be better driven with hard data about the broader customer experience analyzing data from both A and B.

OEM PORTAL

As briefly mentioned above, Glassbeam offers a customer facing portal opportunity. End customers can be given a branded UI to access their own data in a Glassbeam hosted portal. In addition to delivering value back to end customers, an external portal has some interesting possibilities:

▶ A branded customer portal can be a direct source of incremental revenue, or wrapped indirectly into a premium service or support level
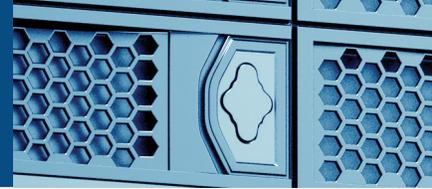
- A customer portal that provides real value can help convince end customers to share their data (where the vendor makes it optional) back with the vendor
- A portal setup for channel partners can help them better service their end user accounts inturn (and generate revenue, and encourage data sharing)

PREDICTIVE ANALYSIS

Almost all of the areas of ROI we've been reviewing are based on effectively processing and hosting data for both account and aggregate level analysis and reporting. But there is a bigger opportunity still, and that is to apply machine learning algorithms and predictive analytics to the resulting data. Glassbeam at this juncture already has 10 different types of predictive algorithms on hand for advanced modeling and alerting, some of which no doubt will have the potential to change businesses wholesale once they find a predictive angle to exploit.

What's important to realize is that unlike traditional BI or flat files, big data solutions like Glassbeam's are designed to maintain all the low-level data going forward, creating a huge and growing history that can be mined at any point in the future when new algorithms and applications are developed. With traditional database approaches, "aging" data is incrementally summarized and archived off to maintain performance. The detailed data window is often smaller than desired, and there is no effective way to get back details once gone. In other words, the smartest thing you could do now with big streams of obviously useful and relevant data is to process them into a big data system like Glassbeam's, even if you don't know what your ultimate "killer app" is going to be down the road. It's like data science risk insurance and business rocket fuel storage all in one!

And finally we note that Glassbeam allows extraction and reporting of any sets of processed client data back out of their platform into a client's systems – spreadsheet, CRM, ERP, BI, help desk or otherwise.

SUMMARY

Glassbeam may improve productivity across the board and drive tactical operational excellence but the real value we think is how it provides strategic decision-making business intelligence. Any vendor who makes a product or solution that can be instrumented to provide usage, configuration, status or other relevant details should seriously be looking to process and leverage that data for multiple beneficial purposes. Those that don't get on board will get competitively left behind.

However, business data analysis can be a difficult proposition to implement at PB scales, and certainly not something that is easily or cheaply "home-built" (i.e. roll-your-own Hadoop cluster). Glassbeam has a distinct advantage in offering a scalable, purpose built analytical solution with SCALAR that supports key business processes and business focused users (though it can be customized), with a general enough applicability to just about any kind of vendor product data "stream".

The benefits to leveraging customer-derived usage data are many and obvious – proactive support, increased sales opportunities and better product management decisions are just the tip of the iceberg. As the type and capabilities of possible "sensors" expands, and more vendor solutions become instrumented in this rise of "Internet of Things", we expect Glassbeam will continue to lead in this space with forward thinking business friendly analytics backed by powerful automated big data analysis capabilities.