

# PRODUCT ANALYTICS & INTELLIGENCE

Early adopters of product analytic tools—particularly IT equipment and infrastructure providers—see its game changing impact. They believe product analytics will bend the traditional value chain into a “feedback loop”; valuable information from connected products will continually flow back through the complex business alliances that create, deliver, and support those devices. As it evolves, “product intelligence” will amount to nothing less than a “digital nervous system” that completely automates most functions and processes, allowing equipment OEMs to achieve undreamed-of customer intimacy.

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**M**ost IT equipment manufacturers are classic product companies. They have tended to limit their service and support offerings to the minimum capabilities and scale required to ensure customer satisfaction. In recent years many IT equipment players have developed networked service and support offerings. However, while most support automation programs do impact the costs, effectiveness and efficiencies of delivering services, they do little to make use of produce intelligence : the vast stores of information value related to the usage and behavior of connected IT equipment. A new generation of analytic tools is emerging that takes the value of connected products one significant step further. These tools dramatically increase a vendors focus on customer needs—in many cases before the customer recognizes these needs.

**Summary of Findings:**

- Manufacturers of IT equipment believe new “Product intelligence” analytic tools are a significant opportunity that will drive many new technical and business values for their customers.
- Equipment suppliers we interviewed believe services automation will set the foundation for a whole new generation of capabilities that will provide much deeper insight into customer needs and requirements.
- Early adopters of product analytics are already measuring results, including: break-out double digit top line growth; 5-10% line-of-business ROS impact; service productivity improvements of 20-35%; and, dramatic customer retention improvements based on improved product designs.

### THE ADVENT OF CONNECTED PRODUCTS

Even though we have been steadily designing devices and products with more and more intelligence, this information has gone largely unleveraged. This is surprising, because this information can offer extraordinary business advantage to the companies that manufacture and deliver and service those products, especially in terms of customer relationships. Historically, the value of an electronic product has been confined to the product itself -- customers purchase a device and use it until it breaks or becomes obsolete. For the most part, these transactions generate minimal information value for the manufacturer—typically as soon as the product leaves the shipping dock, the manufacturer has lost touch with it altogether. But a networked product continues to generate information value over its lifespan. The manufacturer can know where the device is located, when it was installed, critical specifications, diagnostics, availability of spares, usage patterns, support status and so on.

The advent of connected products makes the state of (i.e., the information about) a business's assets vastly more visible. Nowhere is this phenomena more evident than the IT and network equipment arena where a broad number of vendors have developed connected service and support programs. These new offerings enable IT equipment manufacturers to accelerate a migration from reactive product support to “predictive” services and, ultimately, to a customer relationship informed by real-time product intelligence.

#### How Research Was Conducted

During August and September of 2008, Harbor conducted interviews with over 20 IT systems and infrastructure providers and customers who are in the early stages of adoption and delivery of connected services. This White Paper explores the adoption climate, benefits, economic impact and success factors arising from connected product analytics.

### PRODUCT SUPPORT AUTOMATION - WHY IS IT IMPORTANT?

Our society is at the cusp of a “perfect storm” of network connectivity. This phenomenon is not just about the dichotomy between people communicating with people or machines communicating with machines: it also includes people communicating with machines (e.g. a networked ATM), and machines communicating with people (e.g. automated alerts on a field technicians PDA). The concept of network effects states that the value of a network grows exponentially with the number of nodes connected to it. However, along with the value, so too grows the complexity of managing networks and systems and the reliance on these networks and infrastructure to function properly.

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All of this points to the many pressures cast upon customers and equipment suppliers. The complexities of managing IT systems and network infrastructure today have become enormous. Networks are handling systems of increasing breadth, spanning beyond traditional views of data networks. The number and the diversity of devices that IT organizations must accommodate is rapidly growing. For example, mobile phones, PDAs and so-called smart phones are becoming mainstream to data networks. Voice over IP

**“Product analytics leads us beyond traditional ‘break-fix’ support to new modes of leveraging customer-equipment manufacturer intimacy.”**

VP Support Services, Storage Systems Equipment Mfr

has gained widespread acceptance, with video not far behind. Many business processes are becoming automated, such as supply chain management, procurement, and customer interactions. All of this illustrates that as more and more processes, systems, and services become dependent on a single unified infrastructure, the reliability requirements of these systems, and

the consequences of downtime, increase dramatically. Customers want to improve their systems & network availability, performance and data center processes. They are now becoming aware you cannot do this without automation.

In the last few years, early adopters of connected services in the IT equipment arena have recognized the strategic implications for their businesses that comes with support automation. Because it is impractical to deploy human beings to gather and analyze the real-time field intelligence, remote services depend on “machine intelligence.” In an automated support environment, reliable and fast microprocessors do what they are particularly good at doing: digesting large numbers of data points, talking to each other about the data, controlling each other based upon the state of the data—all in a matter of nanoseconds. Human beings cannot do this, nor should they. This incessant stream of ongoing business information should be invisible to people; connectivity and automation provide the foundation for automated product support. IT vendors increasingly view automation as a minimum requirement for managing infrastructure. While there are a wide range of potential benefits created from remote services, it is in the area of service efficiency and support effectiveness where the most immediate and tangible efficiencies can be seen.

## RE-DEFINING TRADITIONAL SUPPORT SERVICES

It's conventional wisdom to say that product companies and their partners should embrace services as a new means to generate sustainable growth. The logic has been examined many times: services typically involve a recurring revenue stream, less fixed capital, and potentially much higher margins than those of a strictly product-centric business. Designed and executed properly, services can offer an escape from the pressures of commoditization and maturation.

However, traditional customer relationship and product support programs yield only intermittent, uneven and incomplete windows into how customers interact with a product. Once a product is shipped to a customer, the manufacturer loses sight of who buys it, how it is configured, what its use is and what the customer experiences with it. When products become networked and their support is automated, the environment in which they are utilized becomes more "aware" and responsive. Eventually, this environment helps customers optimize their processes, save money, and become significantly more efficient.

The early adopters of product support automation in the IT equipment community we have spoken with recognize that connectivity is driving new compelling options for support. The areas of greatest impact include:

- **Improved System Support Knowledge:** Customers, who are accustomed to being "blind" to the devices in their data centers and on their networks, gain visibility. With performance data available at any time for service providers and customers alike, equipment vendors will be able to flag potential problems as well as predict possible future failures or to advise on a course of action to save cost or improve performance.
- **Service Lead Time and Cost Reductions:** Equipment partners will be able to remotely connect to customers' infrastructure, including after-hours support when customers often have no staff on-site, and remotely diagnose and schedule downtime required for repairs and updates. Service centers can be automatically linked to interrogate products remotely to ensure that technicians and operators are equipped with the correct diagnosis and tools thus reducing the time the technician requires to resolve customer issues or problems. These actions obviate the need for manual support while at the same time ensuring maximum systems availability.
- **Agility and Flexibility:** An "aware" product strategy introduces the capability to apply changes almost instantly. With fewer direct human interactions, updates can be automatic and support changes to intelligent products deployed much more efficiently.

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- **“Stickier” Customer Relations:** Due to the visibility provided, vendors become much more aware of a customer’s installed base of devices and their respective configurations and effectiveness of support. This can, in turn, improve relations as suppliers become much more responsive and ultimately more proactive.



The thought leaders we spoke with to develop this paper believe that leveraging connectivity for service and support automation opens up the potential for huge efficiency improvements and performance optimization. An emergent group of IT equipment manufacturers have discovered that product support automation is really just the beginning. They see automation as a means to gain deep insights into usage, requirements and product/systems behavior. They believe there is much more value here than immediately meets the eye.

## Product Analytics Impact

### PRODUCT ANALYTICS DRIVE IMPACTS BEYOND CUSTOMER SUPPORT

Up till now, most of the discussions concerning product support automation focus almost exclusively on simple monitored values such as alarms and alerts. However, basic monitoring alone steals the limelight and potentially eclipses the real revolution. By utilizing connectivity and analytic tools to more tightly integrate customers and their equipment partners in a closed loop of intimacy. This is where the real value lies.

The feedback we have gathered from early adopters shows that while field intelligence provides significant improvements to product support there is much more hidden value in product intelligence than heretofore understood. Connectivity enables many additional values including transparency into the usage and behavior of products as well as feedback to customers to help optimize systems and application performance.

As customers increasingly narrow their focus on their true core skills, they want to assume less responsibility for managing and maintaining the physical IT assets they utilize in their business. The responsibilities are shifting towards those who manufacture, sell and support these assets. Now, the objective for IT equipment suppliers is to use a new generation of highly automated monitoring and analysis services as a game changer that will:

- allow the vendor to deliver detailed and proactive information and services that are tailored to the unique needs of individual customers;
- create a closed, real-time loop, between the vendor's support resources, product development organization and related business units allowing products to be specifically designed for, and implementations tuned to customer requirements and usage patterns;
- improve the value and profitability of partners service offerings and allow the vendor to establish closer, more proactive relations with their customers.

**“We have given our customers a perspective into their own systems that they never had or even imagined was possible.”**

**Engineering Team Director - IT Server/Storage Mfr**

This will allow equipment manufacturers to look beyond simply providing the minimum service required to attain customer satisfaction and utilize automation as a foundation tool that enables product analytics and intelligence which will, in turn, allow manufacturers to create lasting and binding relations with customers.

### RE-THINKING PRODUCT DEVELOPMENT

Information gained from product usage and behavior is usually limited to the occasional support call and interactions that really only address problems associated with failures and malfunctions. This type of feedback only amounts to a very small portion of the product's entire life cycle. The manufacturer cannot see how the product is actually being used and

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how it performs. Most importantly, neither the manufacturer nor the user typically has any view of the events and subtle changes that may or may not be occurring in the life of the product.

The emergence of connected product analytics has the potential to provide manufacturers with comprehensive, real-time information on devices and systems throughout their entire life cycle. It will allow manufacturers to see patterns and signatures that reveal robust information about the product’s behavior and usage by allowing the manufacturer to aggregate not only information about the product and its configuration but also about how it performs.

**Product Analytics Value**

<b>Design &amp; Engineering</b>	<b>Marketing &amp; Selling</b>	<b>Operate &amp; Support</b>
Apply rich data on how products are used in new designs	Understand customer installed states – end of support; end of life, etc.	Evolve service paradigm to automate fixes and updates
Design for automated service and support	Create products that are more valuable	Mine real time data to improve customer touch points
Accelerate product introduction cycles and segment innovation	New revenue generation by bundling new service offerings with products	Create products that are easier to adopt and use

Source: Harbor Research Analysis

Product life cycle analytics and feedback can provide valuable insights, such as:

- providing a view of what features and functions are most and least important to various segments of customers;
- providing accurate profiles of across different customer segments that offer the ability to more deliberately plan cross-segment platforms and products;
- identifying niche segments—such as high performance users—around which special versions can be designed in the future.

Once a manufacturer knows how customers are utilizing products, information can be shared across various functions, helping to enhance the entire life cycle experience for customers. Ultimately, this information can be used by manufacturers for sales and marketing efforts, product development, and an expanding range of customer services.

Information such as log files can be sent back to a product intelligence platform in a standardized format where data can be aggregated into a database to perform a variety of functions, including:

- the organization of details on devices, configurations, locations, status and related usage;
- gathering and analyzing performance data across various products and segments;
- aggregating and analyzing multiple, parallel levels of data to allow interpretation by product development engineers, support technicians, and other functions.

**“It’s not just about “reactive support” or “products for products sake” anymore..... we have to incorporate capabilities into our offerings that will give us unfair advances over our competitors - product infomatics looks like a “killer tool”**

CEO, High Performance Computing Platform Supplier

While many believe support responsiveness and cost reduction from productivity improvements are still important goals for remote service and support offerings, several executives we spoke with view new value added capabilities from product data analytics as a game changing capability.

Device networking and management will generate the intelligence necessary to deliver smart product and smart services. It will also allow for insights into how products should be designed, marketed, sold and delivered. With the introduction of product analytics, the distance between the promise of automation technologies and their real-world “applied” value is closing quickly.

## Product Analytics Futures

### WHY IS IT IMPORTANT TO ACT?

We believe product data analytics is a new and unique dimension to the broader connected products and services story. Any equipment manufacturer that chooses to network-enable its products and leverage, a better understanding of its use holds a brand-new trump card: the manufacturer owns the information and insights generated by the networked device. This creates a profound empowerment that is surprisingly under-appreciated.

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For IT equipment OEMs “disintermediated” by channel partners, or out-finessed in services by multivendor providers, it should come as a revelation. It used to be that your competitors and even your partners could live off your standalone dumb products without you. They could cut you out of the loop and there was nothing you could do about it. They won’t be able to do that anymore.

## Impact of Product Analytics Across Business and Delivery Chain

Product Realization Impacts	Market Delivery & Supply Chain Impacts	Service & Support Impacts
Lead Time – Design to Launch – Reduced by 15-33%	Increased Awareness of Installed Equipment Status Impact on Sale Hit Rate 20-30%	Life Cycle Support Cost Reduction 12-15%
Reduction in Engineering Force Based on Better Understanding of Requirements (20-30% est)	Field Spare Parts Inventory Reduction of 25-40%	Increased Services Operating Profit 12-18%

Source: Harbor Research Analysis

In many ways, this type of capability will force more IT equipment vendors to act sooner rather than later in the race to gain first mover advantages. This expansion of remote services into full life cycle product intelligence capabilities will foster:

- higher value, more differentiated services and higher service levels;
- develop and capture new annuity revenue streams;
- reduce a vendor’s own product support and process to support costs;
- utilize customer configuration, usage and problem data to design better, more highly targeted products and systems for their customers;
- tailor marketing campaigns and sales efforts around highly customized value propositions; and,
- establish themselves as a high value partner and a trusted advisor.

### UNLEASHING NEW VALUES

Product analytics has the potential to drive IT equipment value to customers a long way beyond uptime and more efficient support. These capabilities enable IT vendors to capture and manage data that can be integrated directly into customer’s asset management

applications. This can help to improve operational efficiencies, provide for depreciation schedules which ensures adequate deductions as well as facilitate compliance.

While improved asset visibility will provide significant value in and of itself, its greater value is as an enabler for a number of higher level processes. It moves the vendor and the customer beyond maintaining and cataloging the infrastructure. The initial step provides a knowledge base from which customers can begin to centralize infrastructure decisions, standardize data center and IT processes and rationalize resources. From here, customers can use the data and knowledge for policy-based rules and best practices to improve overall systems availability and performance.

While all of this will quickly become a given, real-life IT shops consist of equipment from many different vendors. Product analytics opens up many possibilities in heterogeneous network and equipment

environments. This can eventually provide for many new opportunities for value added partnerships between and amongst IT vendors, channel partners and related value adding specialists. However, all vendors will be pressured to agree on and conform to evolving standards that will permit communications among, if not co-management of, each others equipment and systems. This also does not even begin to measure the channel partner relationship and profitability advantages that can be gained by designing, selling and implementing product intelligence and analytics programs through partners.

**“We are seeing actual competitive wins in the marketplace based on insights we have gained from analyzing our customers’ product usage.”**

General Manager, Network Equipment Mfr

### BUY, DON'T MAKE

This analytic activity cannot simply be thrown at any existing IT equipment suppliers own service and support systems infrastructure and be expected to work. You need to prepare for it. Herein lies a huge opportunity for software as a service and for specialists in product data analytics. But this implies not only new capabilities in the product, new sensors or instruments and software deployed at the customer site, but perhaps most importantly a substantial and robust back-end system platform on which the analytics capability is built.

Automated information-gathering can easily generate volumes of data-points that must all be validated and then subjected to the sophisticated techniques (data-smoothing, data-

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mining) that turn data-points into actionable intelligence that can be shared and leveraged to identify customer needs, create new revenue-bearing services as well as determine ways to optimize performance.

In most cases, product OEMs should view connected product analytics as a unique competency. Many players will quickly see that it does not make sense to aggregate and mine device data themselves, and will off-load this task to a specialist. This allows the OEM to remain focused on its most valuable capabilities and skills and leave the 'tooling' for data analytics to the specialist. Few product manufacturers seem to understand that device-enabled product analytics is a radical departure from their current business mode.

Running product analytic systems requires special skills. Further, the costs to build a system solo appears vastly prohibitive based on experiences of those few who have ventured into this realm. By working with specialists, product manufacturers can efficiently move to leverage the galaxy of hitherto unavailable data upon which to build significantly enhanced—and even entirely new—offerings.

#### IS ANYONE OUT THERE PROVIDING CONNECTED PRODUCT ANALYTICS?

This white paper is about a fundamental break-through opportunity driven by [remote] networks, analytics and connected services. It was provoked by the introduction of Glassbeam a new product analytics offering from Orchesys. Glassbeam offers a unified solution for analytics related to product usage, behavior and support, based on leveraging embedded intelligence in IT equipment. Glassbeam is not an incremental new support scheme. Rather, it offers a significant step-function change in the way systems and equipment performance will be analyzed and managed in the future.



Based on our discussions with equipment vendors and customers who have been working with these types of technology, it is an offering perceived as having entirely new value. The perspective and feedback from these early adopters is that field intelligence makes product performance and system performance visible as never before, providing partners with transparency for better support and, ultimately, customers with ever greater ongoing value. Orchesys enables partners to add unobtrusive product analytics to a broad range of network equipment and systems automation. It treats user concerns—from product usage and performance and to health and support—as a unified challenge that can be addressed by a new

generation of analytics as a service. In taking this perspective, we believe Orchesys is defining a new meta-market opportunity with vast potential.

### **CLEAR STRATEGIC ADVANTAGES FOR IT EQUIPMENT SUPPLIERS**

Some IT equipment players have already launched new business solutions enabled by networked devices, and many others have started the process of designing connected support programs. The pace of adoption is accelerating. Robust systems can be built with product data analytics, and what remains of technological risk pales next to the risk of delayed action.

IT equipment providers can use the knowledge gained from analytics to quickly achieve strategic advantages. Suppliers can transform their businesses from traditional “box builders” to that of a real solutions provider and trusted partner. This strategic value can be further enhanced by allowing knowledge to be shared and leveraged across delivery and support chains. Product analytics doesn’t just provide a “binding agent” between suppliers and their customers. It’s advantages extend beyond that, linking together suppliers and their partners to create sustainable advantages in an increasingly competitive marketplace.

### **About Harbor Research, Inc.**

Harbor Research Inc. has more than twenty years of experience providing research and consulting services to early stage start-ups as well as large, diversified organizations addressing broad markets from multiple business and technology platforms. Harbor’s strategy and business development work is organized around emergent and disruptive opportunities, with a unique focus on the impact of the Pervasive Internet and Smart Services — the use of the Internet to accomplish global device networking that will revolutionize business by unleashing entirely new modes of system optimization, customer relationships, and service delivery. Harbor Research’s clients, leaders in communications, computing, control, and content, benefit from our ability and willingness to take an informed position that combines creativity, in-depth knowledge of the marketplace, rigorous strategic thinking and creative processes.

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