



Ptak Associates

Informed opinion for savvy IT

OPERATIONAL INSIGHTS FOR RUNNING IT AT THE SPEED OF BUSINESS

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Introduction

Emerging business and technology trends¹ are placing greater demands and challenges on IT operations staffs. Today's information technology must operate at the speed of business, where customers and business users expect instant response and always-on access to applications and business services. At the same time, IT is buried under mountains of data, which are amply fed by continuously flowing streams of monitoring and metric data² from networks, servers, storage, databases, mobile infrastructure, applications running in external and internal clouds, events, operation logs and more.

Despite this wealth of data, IT is not reaping the maximum value from its data because it lacks the time and tools to analyze the data properly. IT has a Big Data problem that can lead to major blind spots due to the difficulty of aggregating and analyzing data quickly enough to do something about it – especially with massive amounts of IT data, the fact that data is kept in many disparate tools, that data is dispersed across the IT environment, and that data is in multiple formats.

Finding a solution to IT's Big Data problem is critical because the ripple effects of avoidable outages and performance issues reaches far beyond IT. It affects developers, application owners, performance analysts, business users and customers. Ultimately, the lack of visibility and insight diminishes IT's ability to deliver fast application performance, proactive outage prevention and rapid problem resolution, which touches and impacts everyone in the application service delivery chain and most importantly, the business.

IT Operations Analytics

The magnitude of these new challenges requires a major shift in IT's approach. Just as business users turned to analytics to improve business insights for more informed decisions, analytics heightens IT's ability to manage increasingly dynamic environments more efficiently. This new approach is called IT Operations Analytics and it uses analytics-based insights to help solve and resolve IT issues more quickly, proactively and effectively. The IT environment with its massive volume of data, diverse and dispersed data, and time-dependent data is full of Big Data analytics solution opportunities that can positively impact business performance. Insightful solutions that enable developers and performance analysts to accurately tune their applications for high performance, or find and fix application problems with laser-like focus, will positively affect application owners, business users and customers.

¹ Trends such as Cloud, Mobility and BYOD, the Internet of Things, new business models, etc.

² According to IBM, a typical enterprise with 5,000 servers generates in excess of 1.3 TB of data per day. (33 GB of that data is metric data and 1 TB is unstructured data.)



The Value of IT Operations Analytics

A few years ago IBM demonstrated the power of analytics with Watson, IBM's computer-based Jeopardy game show "contestant". Watson triumphed over Jeopardy's best human champions in a situation that clearly favored human-based skills such as understanding variable question and response formats, language nuances, broad cultural knowledge, and understanding and responding in natural human language. Watson was an impressive technological and intellectual accomplishment for IBM.

Watson's example provides an appropriate analogy for IT Operations Analytics. On one level, IBM's sophisticated intellectual effort to create Watson using analytics and advanced technologies was an astounding story in itself. But on a more important level, Watson's Jeopardy performance surpassed expectations and accomplished its goals, which were entertaining TV viewers watching an electronic, competitive Watson win against human champions. The broader lesson from Watson is that the value delivered by analytics is in the quality and results of the outcome delivered, not in the analytics itself. In this case, analytics performed well because Watson amazed viewers with its human-like performance, while the complex and sophisticated mathematic algorithms and technologies underlying Watson's performance were essentially invisible to the viewers.

Likewise, although analytics are important underlying enablers for IT Operations Analytics, when executed effectively it is much more than the mathematics or technology – the main objective is delivering and measuring the value to IT and the business in outcomes.

IT Operations Analytics Deliver Business Value

Most, if not all, business processes depend on technology, which raises the stakes for keeping the technology delivery chain working and performing well. Intelligently developed IT Operations Analytics solutions are potential game changers by giving IT an edge with speed, enabling IT to effectively manage the technology at the speed required for business, and sometimes ahead of the business with predictive capabilities.

As illustrated in the customer example on the right, the financial and business impact of keeping high-value business processes and customer facing applications up and running can be substantial. In these environments, IT Operations Analytics solutions that help avoid business service outages and minimize business application downtime are no longer "just IT tools" but should be considered as investments for both IT and business stakeholders.

IT Operations Analytics results for an IBM banking customer:

- **\$600,000** estimated savings from analytics-enabled outage avoidance (during 4-week trial)
- Predicted outages **3-5 days** in advance
- **10** major predictive incident alerts issued in advance of customer detection

*Results from a banking customer's 4-week trial with its Internet banking service.



IT Operations Analytics Deliver Value to IT

IT Operations Analytics enhance IT staff insight and provide relevant contextual diagnostic information, enabling IT staffs to avoid outages or dramatically reduce problem resolution time by hours. IT Operations Analytics provide valuable assistance to IT staffs by filtering through massive volumes of data and presenting the most relevant information, automatically aggregating disparate and dispersed data, delivering data at real-time speeds, or analyzing and monitoring the relationships between thousands of metrics to find the cause of problems.

Big Data tasks are what computers do best – faster and better than humanly possible and, in some cases, doing what is humanly impossible. By gleaning Operations intelligence, insights and predictive alerts from massive amounts of IT data, IT Operations Analytics can help transform IT from a reactive group to well-informed proactive operations.

In addition, diagnostic approaches captured in analytics tools can be reused. Relevant expert advice can also be embedded in context, allowing regular operational users to handle recurring issues that previously required application experts to perform. In turn, this enables application experts to focus their attention on more difficult issues.

IBM Strengths in Analytics

IT Operations Analytics is not one “killer” product that solves all of IT’s problems. The IT environment consists of many processes, tasks, responsibilities and problems to solve. The term “analytics” is a general industry term describing a broad array of mathematical and Big Data processing and analysis technologies/techniques that can be applied to solve problems. One key aspect of IT Operations Analytics is understanding the IT environment well enough to identify specific IT use cases where analytics will excel. But just as important is selecting the right combination of analytics techniques suited for a particular purpose.³

As an emerging industry trend, IT Operations Analytics plays into IBM’s sweet spot. IBM has been building and assembling Big Data and business analytics capabilities for many years, which primarily focused on business environments. IBM’s \$16 billion dollar investment in analytics attests to the deep and broad array of analytics capabilities amassed by IBM. And now, IBM is leveraging its extensive Big Data and business analytics expertise and technologies, coupled with its deep IT expertise to solve and assist with a variety of Big Data issues in IT environments. The convergence of IBM’s large cache of intellectual property in Big Data, analytics and IT targeted at solving IT operational issues puts IBM in a competitive position that few vendors can match.

³ For example, using natural language processing to filter through event messages (unstructured data) for aggregating event messages that could be related to the situation. Or using multivariate analysis to find correlated metrics.



IBM's IT Operations Analytics Strategy and Vision

IBM's IT Operations Analytics strategy is a natural extension of IBM's broader Big Data and Business Analytics strategies. Building upon its deep and broad arsenal of Big Data and analytics technologies and expertise, IBM's IT Operations Analytics strategy is more advanced and established than would be expected for an emerging initiative.

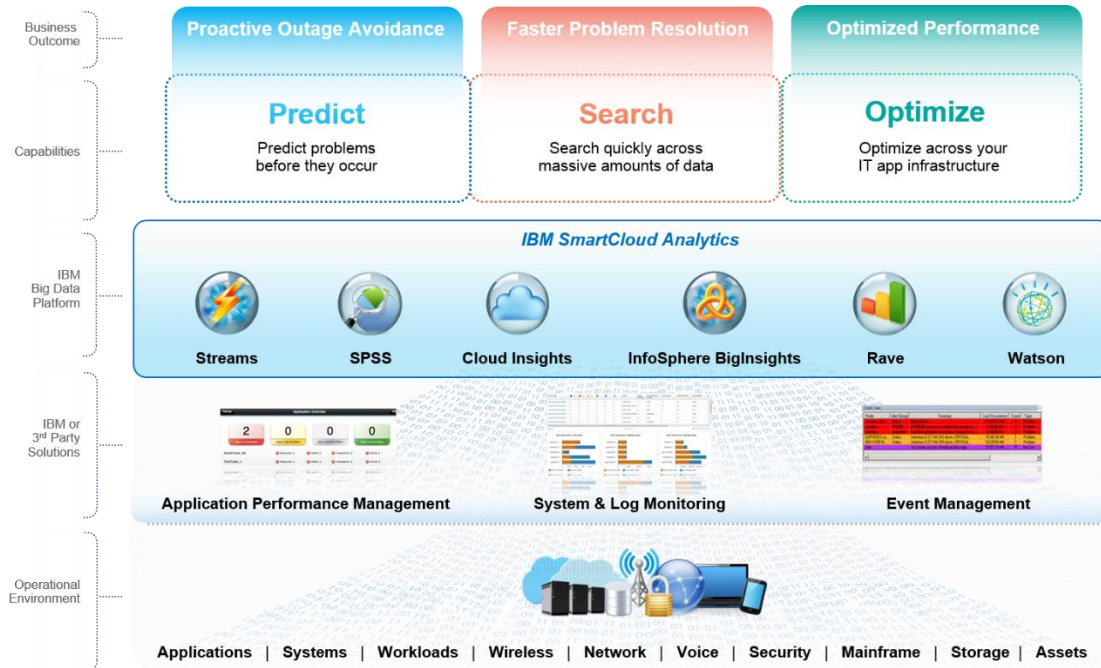


FIGURE 1: IBM IT OPERATIONS ANALYTICS CAPABILITIES (GRAPHIC COURTESY OF IBM)

As illustrated in Figure 1, IBM's vision for IT Operations Analytics leverages and applies its capabilities in prediction, search, and optimization analytics into solutions aimed at avoiding outages proactively, enabling faster problem resolution and optimizing performance. This vision shows IBM's level of commitment to IT Operations Analytics and signals IBM's intention to bring the full weight of its Big Data and business analytics assets to solve issues across the breadth of IT activities. Its goals are, as stated by IBM, "to pursue a wide range of analytics initiatives" to "proactively mitigate risk, attain insights to optimize actions, and reduce cost of ownership across Business, IT Operations, Asset Management, and more."

IBM's IT Operations Analytics uses a set of capabilities, which IBM describes as Predict, Search and Optimize.

- **Predict:** Enable predictive and preventative operations and application management with next generation behavioral learning analytics.
- **Search:** Accelerate problem resolution through rapid analysis of structured and unstructured data. Improve diagnosis with IBM expert advice.



- **Optimize:** Optimize resource deployments with what-if and best fit planning tools. Track capacity and performance of applications and storage.

The core aspects of IBM's IT Operations Analytics approach are its SmartCloud Analytics set of capabilities, Patterns of Expertise and Actionable Advice. IT Operations Analytics like any analytics initiative begins with its technologies and capabilities, which IBM calls its SmartCloud Analytics Capabilities.

SmartCloud Analytics Capabilities

IBM's SmartCloud Analytics is an integrated set of IT Operations Analytics capabilities (see Figure 1), which includes a broad complement of solutions. Before analyzing data, access to the data is required. The capabilities include data integration capabilities that facilitate access to massive volumes of IT performance and health metrics, logs and alerts/alarms. In addition, the capabilities aggregate a variety of data types, as well as data from IBM and non-IBM sources.

These capabilities also provide optimization tools, the ability to rapidly search through unstructured data (such as logs, support documents, etc.), intuitive user interfaces, and automated actions. Community extensions are also included, which will be described below in the Patterns of Expertise section.

Behavioral learning capabilities are important because solutions can self-learn normal IT environment behaviors in order to identify abnormal behavior. Self-learning solutions are more adaptable and realistic than traditional thresholding approaches as IT environments become more dynamic, and it reduces operational costs.

Finally, the biggest advantage of the SmartCloud Analytics capabilities is the ability to pass information back and forth between IT tools and solutions for maximum impact. As IBM's IT Operations Analytics strategy evolves, analytics will permeate across IT, maximizing operational visibility and insights.

It is important to note that although IBM's IT Operations Analytics strategic vision is broad and full of rich capabilities, IBM will be delivering a set of easy-to-use, modular solutions that allow clients to select the solutions that fit their specific needs. A core part of IBM's vision is understanding the need for easy-to-use solutions designed for IT staffs, who are not analytics experts. The advanced analytics technologies that are operating "under the hood" of these solutions will be virtually invisible to users. But what users will see are richer and valuable IT operational insights, made possible by analytics.

Patterns of Expertise

One of the goals of IBM's IT Operations Analytics is helping customers move from being reactive businesses to becoming proactive businesses. IBM's approach uses patterns of expertise, which leverage and build on IBM's expertise in its solutions for outage avoidance, boosting end-user experience, minimizing service impacting events, and proactively finding root causes.



The potential for patterns that capture and codify expertise is intriguing. This expertise could be captured and shared from large enterprise environments, service providers, cloud providers and other experts. If IBM executes this well, expertise that is currently not documented but exists as “tribal knowledge” could be captured, propagated and reused more broadly.

IBM also pre-packages expertise and intelligence in specialized Insight Packs. The Insight Packs use specific patterns of expertise (for example, things that experts know intuitively because of their experience and knowledge with a particular technology) to help predict or resolve IT issues. Insight Packs open the door for IBM’s business partners and broader community to extend IBM’s IT Operations Analytics by building Insight Packs embedded with their own expertise.

Actionable Advice

IBM then completes the circle with actionable advice. Operations insight, no matter how brilliant, that is not acted upon is useless. IBM’s strategy begins with using analytics to provide rich contextual information that helps IT staffs diagnose issues more quickly and efficiently – by aggregating situation-relevant information into one view. But having all of the information at your fingertips does not mean you will know what to do with it. With this in mind, IBM’s vision goes a step further by providing expert advice and guidance on the next steps to take, or suggestions on what could be causing a problem.

The advantages of capturing expert advice and presenting it within the context of the situation at hand are twofold. First, IT administrators who are not experts can learn from the expert advice, as well as being enabled to handle some tasks that previously were handed off to experts. By handling issues immediately instead of it sitting in an expert’s queue, issues are resolved more quickly and efficiently. Second, IT operational staffs benefit from the collective expertise of their own experts, as well as IBM and IBM partner experts.⁴

Automating actions is also available for customers to use. IBM takes a risk-centric approach to automation. They provide customers the option of automating actions, which customers can choose to use for low risk situations and tasks. But for slightly higher risk tasks, IBM provides expert advice that could enable lower level staff to perform selected recurring tasks, which partially relieves their experts’ workload.

IBM intends to deliver IT Operations Analytics solutions that are designed and pre-packaged with intelligence and actionable insights “for use by the common IT man/woman” – in other words, designed for ease-of-Operations-use and it does not require a Ph.D. to use it.

And in the future, IBM will work towards delivering and enhancing this expertise on an ongoing basis through a cloud service.

⁴ IBM and IBM Partner expertise are delivered as specialized Insight Packs.



SmartCloud Analytics Solutions

IBM SmartCloud Analytics is a family of analytics solutions focused on IT Operations issues. These solutions are designed to provide easy-to-use analytics assistance, and are intelligently pre-packaged with targeted analytics and self-learning capabilities, as well as actionable situation-relevant advice.

IBM's family of SmartCloud Analytics solutions includes:

- IBM SmartCloud Analytics - Predictive Insights
- IBM SmartCloud Analytics – Log Analysis⁵
- IBM SmartCloud Monitoring – Capacity Analytics
- SmartCloud Virtual Storage Center

Predict: SmartCloud Analytics – Predictive Insights

SmartCloud Analytics - *Predictive Insights* is a predictive, early warning system for critical applications requiring high availability. Using streaming real-time monitoring data⁶, *Predictive Insights* self-learns normal operational behavior across the IT environment. *Predictive Insights'* sophisticated analytics monitors and models up to 80,000 metrics simultaneously, enabling it to correlate and identify relationships between metrics across the environment.

Once *Predictive Insights* learns what normal behavior is for the IT environment, *Predictive Insights* continuously monitors real-time streamed monitoring data and notifies IT when it detects abnormal behavior in and between IT metrics, which could signal future IT problems. *Predictive Insights'* early warning gives IT staffs the opportunity to:

- Avoid outages by finding and resolving issues before they escalate into business impacting outages
- Determine the root cause faster by using *Predictive Insights* provided visualizations that display the anomalous metrics together
- Gain better operational insights with lower operational costs

"IBM SmartCloud Analytics helped detect 100 percent of the major incidents that occurred, including silent failures, and helped us eliminate manual thresholds, which will result in a cost avoidance of \$300K USD annually"

*Chris Smith, Director
Tools and Automation
Consolidated Communications
Holdings, Inc.*

⁵ For more information about IBM's capabilities for IT Operations Analytics, visit IBM on the web at: <http://www.ibm.com/software/tivoli/solutions/it-operations-analytics>

⁶ SmartCloud Analytics - *Predictive Analytics* uses monitoring data from IBM and non-IBM monitoring tools.



Search for Root Cause: SmartCloud Analytics – Log Analysis

SmartCloud Analytics - Log Analysis is a diagnostic analytic solution that assists IT operation staffs by using advanced text search and analytics to pull out situation-relevant information from large volumes of dispersed unstructured data such as logs, product documentation and support documents. Log Analysis helps IT staffs because it:

- Locates and visualizes situation-relevant information, enabling IT staffs to analyze and diagnose the root cause more quickly.
- Isolates issues across various domains, including customer session, performance and system faults.
- Detects service issues with built-in expert knowledge for selected software. (Insight Packs)

A Healthcare Provider

- *Reduced time to determine root cause of problems by leveraging performance, log and event data*
- *Expertise to diagnose problems were saved for future use, reducing operational costs*

Optimize: IBM SmartCloud Monitoring – Capacity Analysis

Capacity Analysis is embedded in IBM's SmartCloud Monitoring, which provide clear insight and recommendations for right-sizing virtual and physical servers. The *Capacity Analysis* provides:

- Performance and capacity monitoring, modeling, trending and what-if analysis
- Real-time access to cloud utilization and capacity performance analysis
- Reduce administration costs by optimizing the infrastructure

A leading Pharmaceutical company

- *Optimized VMWare server resources, realizing an annual cost savings of \$150,000.*
- *Insight into virtualization usage patterns enable "right-sizing" of virtual machines.*



Optimize: IBM SmartCloud Virtual Storage Center

IBM SmartCloud Virtual Storage Center is a storage virtualization platform and storage management system. Built into the solution are analytics that enable:

- Self-optimizing storage that automatically adapts to workload changes
- Dynamic and service-oriented Software Defined Storage
- Reduce administration costs by reducing the need for manual tuning

IBM Office of the CIO

- *Reduced users' storage cost by 50% in IBM's Boulder data center*
- *Projected savings of \$13 Million in infrastructure costs over 3 years*
- *Reduced labor for storage tier optimization from 235 hours to 6*

Conclusion

The IT environment is an ideal opportunity for using analytics to disrupt and transform IT, enabling it to run at the speed of business. Analytics help by taking today's chaotic IT environment with too much complexity, too much data and too little insight, and transforming it by providing IT with the right information, at the right time (timely information), insight with rich context, and actionable information. That is the direction that IBM's IT Operations Analytics appears to be headed. It uses analytics to deliver what computers do best, designed as a complementary fit with how IT experts work, while capturing their expertise.

IBM is taking a strategic approach to IT Operations Analytics because of its broader vision. To date, IBM's strategy is the broadest and most clearly articulated IT Operations Analytics strategy from any vendor. Although still in its early stages, IBM already delivered several solutions in its SmartCloud Analytics family, with more solutions expected. As IBM SmartCloud Analytics evolves, expect analytics to also permeate through IBM's IT solutions.

With any newly emerging initiative, the market and analysts usually view it with an element of skepticism. However in this case, IBM is not new to analytics with its existing depth and expertise in Big Data and business analytics, and IBM is already delivering IT Operations Analytics solutions with customer proof points.

IT Operations Analytics has the potential to completely disrupt how IT operates, and in turn, positively impact business outcomes. And at this point, it looks like IBM is a company that can deliver a full complement of analytics from Watson, to business and to IT Operations.





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About Ptak Associates LLC

Our analysts cover a breadth of areas that are ideal to bring you the "Big picture" on new technology trends across the industry. Whether it's Cloud computing, Mobile (BYOD), the Internet of Things, DevOps, Big Data, IT Operational Analytics, Workload Optimized systems or other new trends, Ptak Associates analysts cover these trends with a unique perspective that is both deep and broad.

Our clients include both industry leaders and dynamic newcomers. We help IT organizations understand and prioritize their needs within the context of present and near-future IT trends, enabling them to use IT technology effectively in solving business problems. We help technology vendors refine their strategies, and provide them with both market insight and deliverables that communicate the business values of their products and services. We provide all clients with an understanding of how their competitors are playing in their market space, and deliver actionable recommendations.

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