

HP Service Health Analyzer Brings Predictive Control to Real-time Service Delivery

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Executive Introduction

While many IT organizations have recognized the need for a more effective way to manage the delivery of critical business services from a cross-domain perspective, most still struggle with siloed toolsets, and perhaps even more at issue, siloed ways of working. The problem persists in large part because it requires fundamental changes in how management solutions are designed, as well as cultural and process changes that, if anything, are even more difficult to implement. Then, when many traditional approaches are applied for consolidating data and alarms, the IT organization quickly finds itself saddled with laborious manual threshold setting, a tidal wave of events, and a still reactive approach to solving real service management performance issues.

However, the good news is that architectural, design and functional changes in how service management solutions work together are already beginning to transform the industry, both in terms of improved technology, as well as in terms of more evolved expectations among a growing number of IT organizations. Central in this evolution is the need to assimilate, model and analyze data from multiple “trusted” sources in real time, as well as in support of non-real-time functions such as planning, change management and change review, and asset optimization.

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This ENTERPRISE MANAGEMENT ASSOCIATES® (EMA™) report discusses the reasons behind the rising prominence of predictive analytics in answering these challenges and looks at Hewlett-Packard’s (HP’s) Service Health Analyzer (SHA) as the analytic heart of its broader BSM initiative. HP achieved the highest ranking in [EMA Radar for Business Service Management: Service Impact Q3 2010](#) and the new Service Health Analyzer functionality should significantly advance HP’s position of leadership for at least the near and intermediate future.

The Rise of Analytics as a Core Requirement for Business Service Management

The challenge of optimally delivering applications and other services to end users remains an unanswered challenge across most of the IT industry. EMA custom research indicates that 70% of the time IT is alerted to application service issues from calls and complaints, while barely 25% are IT professionals apprised of problems from service management or other monitoring tools. In other related research, EMA showed that in actually diagnosing problems, 51% of respondents relied on expert opinion and 19% depended on “hand-made tools,” leaving only slightly more than 20% that diagnosed application performance issues with third-party solutions. One IT professional elucidated: *“At my old company we routinely had situations where we’d bring in systems engineers to write things where we didn’t feel comfortable using a commercial product.”* While another IT dialog exposed that, *“We typically do a trace... and send it to a sub-systems engineer and another level four engineer searching for the expertise we’re looking for.”* (EMA custom research and consulting: 2008 – 2011)

Even when off-the-shelf solutions are predominantly in play, many IT organizations suffer from siloed tools more optimized to support ‘Mean-Time-to-Innocence’ for individual IT professionals and isolated domains which can often become counterproductive in resolving true end-to-end service management problems. In contrast, Business Service Management (BSM) architectures provide a more cohesive way of working in which multiple solutions can be assimilated in context, and advanced analytics can assume a more leading role in proactively identifying and resolving problems.

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In the *EMA Radar for Business Service Management: Service Impact Q3 2010* the following criteria were defined as critical to true BSM solutions:

- They are assimilative – they can effectively reconcile, analyze and support automation across a flexible base of multiple, different monitoring investments.
- They have strong support for assessing service and business impact through capabilities such as SLM and user experience management in terms of service impact, and potential linkages into real business outcomes—for instance, revenue, *reservations closed*, or business process modeling in more mature IT environments.
- They leverage service modeling capabilities to extend CMDB definitions and capture service-to-infrastructure interdependencies with real-time or near-real time currency.
- They can enable cohesive policies and cross-domain integrations to support a wide range of automation requirements, including Closed Loop Incident and Problem management, automated remediation through configuration, and other task-based systems of automations.
- They are built off of effective monitoring solutions that are adapted to support service and cross-domain requirements, as well as in-depth diagnostics.
- They enjoy role-based support that's versatile enough to enable effective collaboration.

Central to this is leveraging a service model that can be adapted to real-time or run-time requirements so that a relational context for services and their components can be understood cohesively across multiple dimensions.

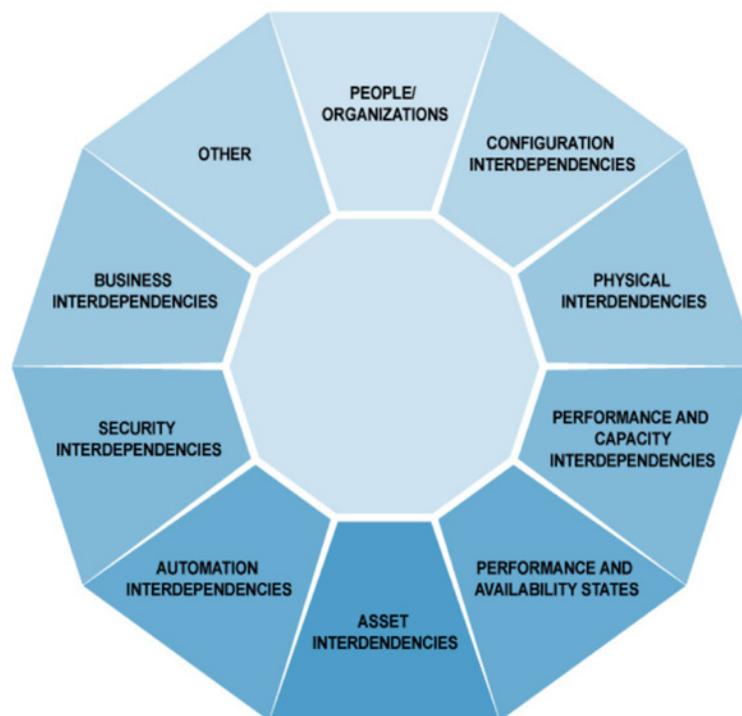


Figure 1: EMA's sample "service model" is designed to show how logical and physical interdependencies are so critical in understanding contextual linkages across infrastructure and application components, KPIs, and lifecycle asset-related interdependencies.

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Such a foundation makes it more possible for advanced analytic technologies to function more effectively. One rough analogy might be that modeling provides a “contextual superhighway” across which superior analytic “race cars” can deliver value at much faster speeds.

Analytics, and in particular predictive analytics, are indeed rising in importance due to a number of factors. One of these is the slow but steady maturing of the market as IT professionals and executives begin to think beyond traditional siloed toolset packaging in which each solution does its own data collection, its own analytics, and its own visualization, towards a more assimilative BSM approach where more powerful analytic advantages can be achieved across many multiple sources.

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Another reason for the rising importance of predictive analytics is the pressure for IT to perform more effectively in support of business outcomes, where delays were typical in the past as triage teams of sometimes more than a hundred people floundered over elusive but often recurring issues. As one service management professional put it: *“When we get a problem, it’s very rarely broken code. It’s usually a server; usually a human error problem. If there was a management product that could pinpoint problems, whether hardware or software, database, and it could find problems and attempt a fix, it would be very welcome indeed.”* (EMA custom research, dialog, 2009)

Yet a third reason for advanced analytics is the growth of more dynamic environments such as virtualization, cloud and Web, Web 2.0 application ecosystems across partners, suppliers and service providers. In EMA’s research report, *Operationalizing Cloud* (Q1 2011), data from cross-analysis revealed striking advantages for those IT organizations with advanced service management dashboards and analytics in assimilating the benefits of cloud computing and cloud services (Figure 2).



Figure 2: Advanced analytics when coupled with service management dashboards can bring dramatic advantages for assimilating the benefits of cloud services.

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HP Business Service Management and Service Intelligence

HP's BSM 9.1 capabilities address virtually all of EMA's criteria for effective BSM Service Impact. This includes HP's *Run-Time Service Model*, support for a wide-ranging (HP and non-HP) breadth of resources, strong support for SLM and user experience management, integrated support for a CMDB and cross-domain automation, and uniquely advanced/predictive analytics just introduced.

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In an earlier report written when HP first introduced its BSM capabilities, EMA wrote: HP "introduced an overarching BSM architecture optimized to the real-time or near real-time requirements of Operations. At the heart of the system is a service model optimized to reconcile information from multiple (primarily HP) sources. This service model can also be viewed as an extension of the modeling in

HP's UCMDDB, and leverages HP's native application dependency capabilities in DDM." ([HP Seeks to Streamline IT Operations with BSM 9.0](#), EMA impact brief, June 2010).

HP rightly characterized this introduction as a "top-down, bottom-up" capability in which IT application services and their critical components can be understood holistically, from the top down, but also with easy navigation to granular, domain-specific analytics, for diagnostics from the bottom up. Another significant advantage in BSM 9.0 was tight integration with Operations Orchestration for cross-domain automation and, in particular, Closed-Loop Incident and Problem (CLIP) management. HP achieved a "Value Leader" ranking with "Best Automation" in the *EMA Radar for Business Service Management: Service Impact Q3 2010*. Even more impressively, HP received the best overall score in BSM Service Impact out of all fourteen participating vendors.

More recently, in November of 2011, HP announced HP BSM 9.1 with much enhanced support for the Operations Bridge and capabilities for cross-domain (including multi-brand) event correlation, new capabilities for what HP calls "Service Intelligence" – uniting service reporting analytics and SLM management with service/infrastructure optimization, and the new Service Health Analyzer. HP also introduced its ArcSight Logger to analyze *unstructured* log-file data for proactive triage and diagnostics as a complement to its broader portfolio. If anything, HP has been perhaps overly quiet in introducing this rich blend of solutions that support multi-dimensional BSM requirements and deliver both diagnostics and automation from a model-driven perspective.

HP Service Health Analyzer (SHA)

With the introduction of HP Service Health Analyzer in November 2011 as a part of HP's BSM 9.1, HP further strengthens its leadership position. Service Health Analyzer was designed by Research & Development working closely with HP Labs. It is optimized for cross-domain analytics. Rather than being a monitoring tool itself, SHA can take data streams from multiple sources and apply advanced, predictive algorithms in order to alert to and diagnose potential problems before they occur.

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Such *assimilative analytics* are a natural fit for HP's assimilative BSM architecture—and bring many benefits. Some of the most salient include:

- Predictive insights to help prioritize and anticipate, triage, diagnose and remediate problems before impacting users.
- Self learning capabilities that require no manual baselining and minimal administration. The solution automatically sorts out predictive contextual insights based on day of week, time of day, month of year, season, etc.
- This dynamic self-learning approach can translate into virtually zero administration and maintenance.
- Support for a wide variety of data sources so that IT organizations can harvest and optimize their existing investments in support of true BSM. HP currently prioritizes its own portfolio, but the BSM Connector is designed to enable third-party integration requirements with supporting services.
- Service Health Analyzer leverages the contextual advantages of HP's Run-Time Service Model (RTSM) so that topological dependencies can be understood “on the fly” and can link into HP's UCMDB where insights into change histories, governance, and broader contextual associations are readily available.
- The RTSM also provides direct linkages into HP's Discovery and Dependency Mapping Advanced Edition (DDMA) for dynamic insights into application-to-infrastructure changes and interdependencies. This can be especially critical in cloud and other environments where changes are far more frequent than they are across traditional infrastructures. DDMA was also highlighted as the leader in another EMA Radar: “(HP's solution) was, in effect, ‘best of show’ in the sense of being the most complete in its technology coverage. As the product summary chart shows, HP scored above the norm on three axes: Functionality, Vendor Strength, and Architecture/Integration.” ([EMA Radar for Application Discovery and Dependency Mapping \(ADDM\): Q4 2010](#)).
- The HP Service Health Analyzer also has broad-based role support for a wide variety of stakeholders.

HP's Service Health Analyzer's advantages can be further understood in context with its core components. Central to these is its *Run-Time Anomaly Detection (RAD) Engine*. This Run-Time Engine leverages a statistical learning algorithm that can predict incidents 60 minutes before they occur. It can process both availability and performance (time series data or statistics) information, analyze historical data, learn normal behavior, create thresholds, prioritize issues by business impact, and reduce or even eliminate redundant alerts. It does this through what HP calls the “Anomaly DNA Technology” within the solution. By matching saved anomalies, which are stored in the engine, it can drive diagnostics that can seriously reduce Mean-Time-To-Repair (MTTR) and often remediate problems before they occur. HP Service Health Analyzer can assimilate data from a wide variety of sources, such as HP NNMI, SiteScope, Business Process Manager, Real User Management, and Operations Manager among many other HP sources, as well as data from third-party sources.

Another significant factor in understanding the advantages of HP's Service Health Analyzer is its ability to fully leverage HP's advanced support for User Experience Management (UEM). This is key because UEM is in many respects the ultimate arbiter of success in assessing the business impact of delivered IT services on end users. It targets actual experience where “the rubber meets the road” or

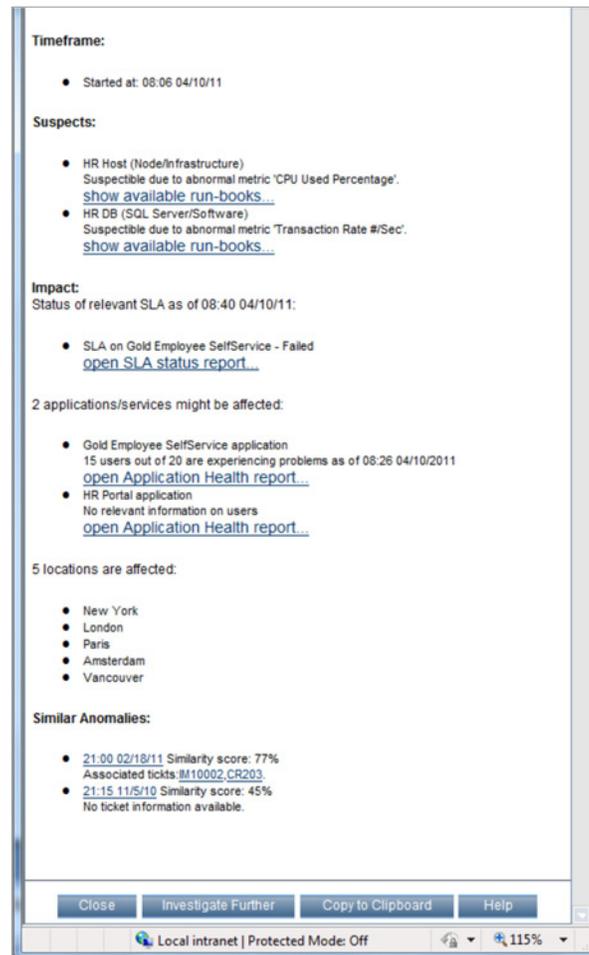
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in this case where the eyes, mind, and fingers of the users/consumers interact with the application. HP's offerings here include *Real User Management (RUM)* for observed, pervasive monitoring of end-user transactions, as well as proactive synthetic testing of the end-user experience via HP's *Business Process Monitor*. This synthetic testing can be extended outside the firewall, which is critical for assessing service provider (including cloud service providers), partner and other interdependencies, via HP's *BAC Anywhere*, or triggering more proactive remediation via HP *Diagnostics*.

The RAD Engine combines CI relationship information from the Run-time Service Model with abnormal metric behavior to define an anomaly. HP SHA takes a snapshot of the topology model at the time an anomaly is detected to identify the changes that were made via linkages to the HP UCMDB, and so help to better ascertain the cause. The HP Service Health Analyzer's support for the RTSM carries with it all the advantages of linking physical and logical entities such as "owner" with "CIs." This modeling provides a superior context for automation as well, since it can link task automation to both physical entities and logical associations (owners, customers, costs, contracts, SLA commitments).

HP has well-defined *Role-based Console* support for Service Health Analyzer, with a focus on the *Operator*, *Application Support* and *Subject Matter Expert (SME)* roles (Figures 3-5).



Figures 3: HP Service Health Analyzer, Simplified Anomaly View

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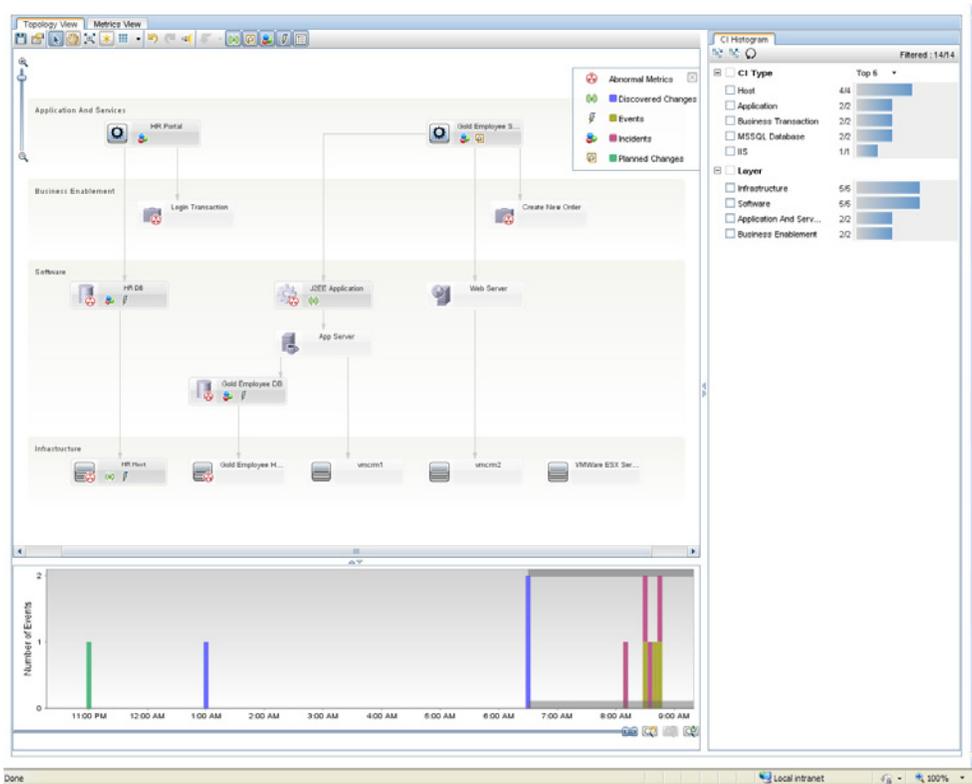


Figure 4: HP Service Health Analyzer, Subject Matter Expert View with topology snapshot and change detail

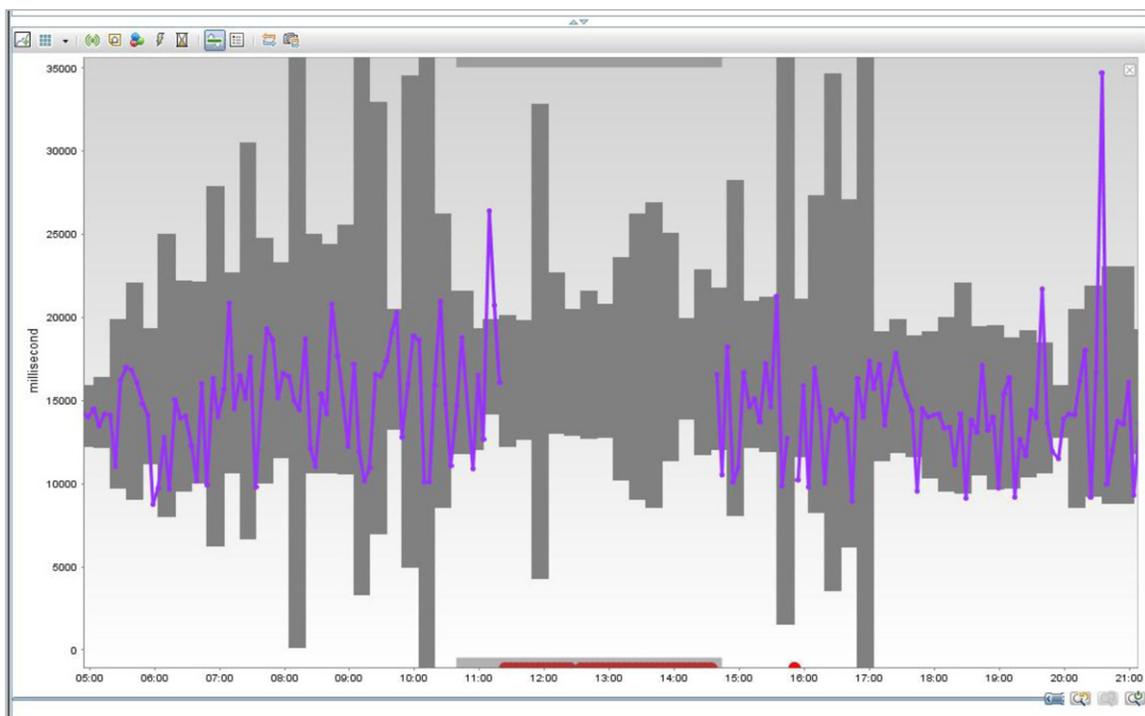


Figure 5: HP Service Health Analyzer, Subject Matter Expert – Baseline detail

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Unique to HP's SME support is added topological, configuration and other contextual background for insight into change histories, and other process-related considerations. The SME console is optimized to support more granular remediation requirements when complex service performance problems arise.

In large part through linkages with the Run-Time Service Model, Service Health Analyzer also profits from well-integrated automation support, in particular via HP's *Operations Orchestration (OO)*, for true cross-domain IT Process Automation, sometimes called "run book." This integration is significantly enhanced by HP's Anomaly DNA Technology which can associate trouble ticket information and run-book policies with specific, performance-related events or event clusters. This powerful combination helps to make HP the industry leader in Closed-Loop Incident and Problem Management, as

Operations Orchestration (OO) drives coordinated automation across HP's systems and network configuration solutions. Operations Orchestration can also drive actions to support automated diagnostic activities across multiple management tools based on pre-defined policies reflecting event or anomaly-related conditions. And finally, HP OO integrates with service desk workflows for enhanced support for trouble ticketing and more advanced process governance.

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EMA Perspective

HP has taken a bold step forward with BSM 9.1 and the introduction of Service Health Analyzer—one that should delight its more forward-thinking customers while placing added pressure on many of its competitors. HP's commitment to model-driven analytics, combining its Run-Time-Service-Model with Service Health Analyzer, encapsulates the very essence of next-generation requirements by bringing two dynamic and assimilative capabilities together—one for current and past contextual insight, the other for predictive alerting and diagnostics. In other words, HP is effectively shattering the siloed universe of stove-piped views on two very critical fronts: topology, configuration, and logical/physical interdependencies; and events and performance information across many multiple sources. Combined, these also inform on and enable superior automation capabilities for remediation, diagnostics, governance and other functions, as well as much improved role-based visualization, navigation and reporting. If there were any area for near-term improvement, it would be an expanded effort to assimilate third-party (non-HP) sources more aggressively. However, with BSM 9.1 and Service Health Analyzer, HP can lay claim to industry leadership in delivering truly operational BSM.

About Hewlett-Packard

HP creates new possibilities for technology to have a meaningful impact on people, businesses, governments and society. The world's largest technology company, HP brings together a portfolio that spans printing, personal computing, software, services and IT infrastructure at the convergence of the cloud and connectivity, creating seamless, secure, context-aware experiences for a connected world. More information about HP (NYSE: HPQ) is available at <http://www.hp.com>.

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