HP Business Service Management

Managing today's dynamic environments to meet the needs
of your demanding business

Technical white paper

Table of contents

Executive summary

As companies shift their focus from cost cutting to innovation, they need to quickly offer new business services that give them a competitive advantage. Exciting new technologies such as virtualization and cloud computing will drive these services, so organizations will need to build expertise in managing these and other leading-edge technologies. In fact, recent research indicates that 42 percent of companies believe that innovation and deployment of new technologies are two of their top challenges. [1]

If you manage IT operations, then you understand that your organization is measured by the value it delivers to the business. And you know that it is hard to explore new technologies and find new ways to increase business value if your team spends most of its time dealing with day-to-day activities.

With today's executives demanding more new services, with faster release cycles, your IT team must go beyond the traditional model of planning, building, and running business applications to become a strategic IT service broker for sourcing, integrating, innovating, and managing as well as developing—and do it with existing resources. That means shifting time and resources away from day-to-day activities, which is no simple task. It requires a complete transformation of IT operations, with efficiency increases across the board, from first-level operators to subject-matter experts (SMEs). And it means you'll have to automate manual processes for tasks like troubleshooting, resolving problems, updating service maps, and escalating issues.

This white paper explains how HP Business Service Management (BSM) solutions can help your IT organization drive business innovation, and how HP solutions such as HP Operations Center, Network Management Center, and Business Availability Center, used independently or together, can help your organization become a strategic broker of IT services.

Customer successes

HP BSM has delivered significant results for many customers. Some examples include:

- A Fortune 50 manufacturer had implemented a call center system to manage customer support. Within the first three months of its implementation, the system experienced 50 percent availability. Using one part of the HP BSM solution—products from HP Business Availability Center—this company was able to increase availability to 99.83 percent, with less than 1 percent of user tickets going to the operations team as application incidents.

- A major provider of healthcare products and services is using the HP BSM solution to reduce costs, outages, the number of people dealing with incidents, and time spent on identifying root causes. Employing both top-down and bottom-up approaches to managing their business services, and using tools such as HP Operations Manager, Network Node Manager i, Problem Isolation, and Real User Monitor, this company reduced Severity-1 costs and outages by 48 percent and 11 percent, respectively.

- A European airline wanted to deploy an integrated monitoring toolset to raise end-user satisfaction, reduce service disruption, increase application performance, and enhance the visibility of infrastructure problems. They employed both top-down and bottom-up approaches using BSM products like HP Operations Manager, Smart Plug-ins, Network Node Manager, Performance Insight, Business Process Monitor, and End User Management. As a result, customer and end-user satisfaction reached an all-time high, proactive monitoring of the IT infrastructure enhanced service delivery, improved workflows increased productivity, and downtime of their business services was reduced.

---

[1] ITSMA and PAC, How Customers Choose Study, 2009, http://www.itsma.com/research/how-customers-choose-solutions-2009/

Transform operations to drive business innovation

Figure 1: Changing IT architectures increase complexity
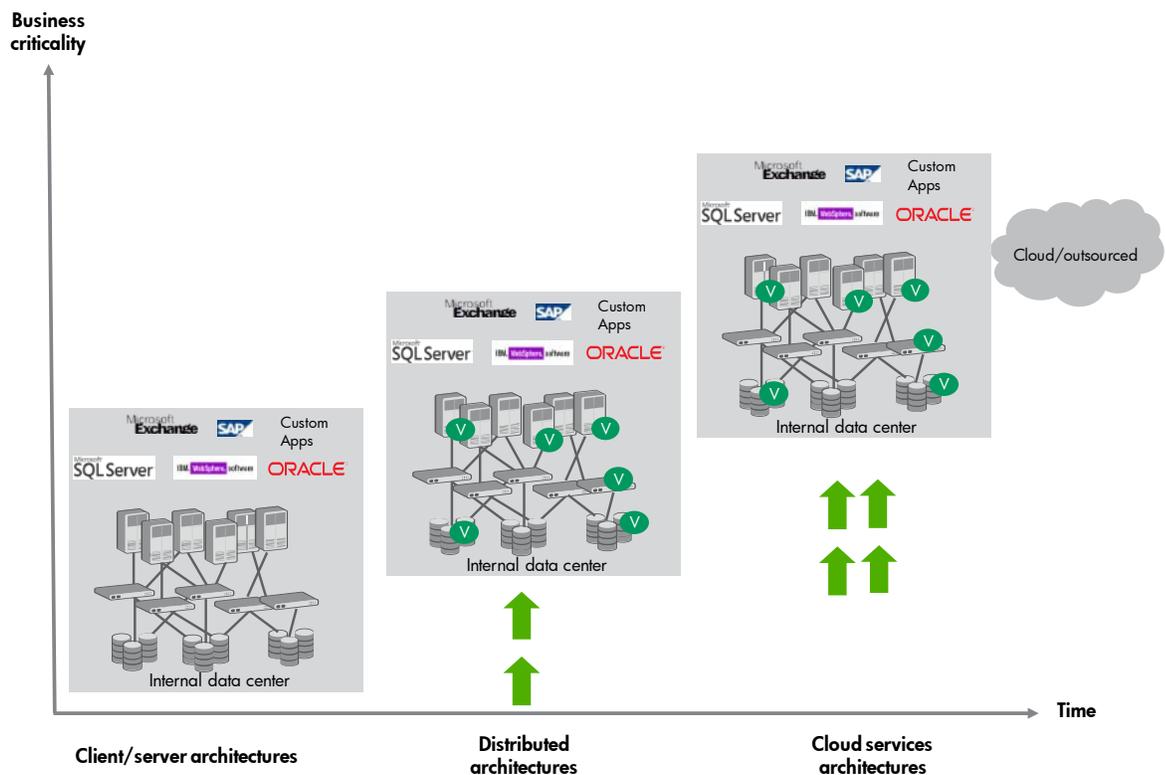
Over the past few years, IT service architectures have changed, adding complexity and dynamic relationships. With client-server architectures, applications and the underlying infrastructure were relatively static, compared to today. Distributed architectures, on the other hand, mean more components, more interdependencies, and integration and management of many different technologies. This, in turn, results in many different teams within an IT organization working independently of each other. This process inefficiency could be tolerated in the simpler days of client server—barely—but now that virtualization and cloud computing have increased complexity, siloed operations jeopardize business outcomes.

In addition to the natural changes in IT architectures due to the introduction of new technologies, the management of those architectures is becoming more complex. In the client-server world, changes were infrequent and manual management of those changes was feasible—even the preferred method of control. With more elements and components to manage as well as isolated silos to monitor, IT organizations can no longer efficiently manage the IT ecosystem manually while maintaining desired service levels.

Frequent configuration changes characteristic of virtualization also make IT management more difficult. With new technologies being utilized, the likelihood of something changing in the IT environment on a real-time basis increases dramatically. But IT operations have been optimized for static environments. Traditional ways of monitoring and managing the IT ecosystem will no longer suffice if a company hopes to drive innovation in a way that increases service levels on new services.

So what exactly is needed to transform operations as IT ecosystems grow in complexity and become more dynamic? There are four overarching requirements for the next generation of IT operations: operations powered by a dynamic and up-to-date service model, maximum automation of key IT processes, enhanced collaboration among disparate IT teams, and effective and efficient management of cloud- and virtualization-based dynamic infrastructure.

- **Dynamic and up-to-date service model:** Changes in the IT environment happen much more frequently than in the past, especially with the increasing use of newer technologies such as cloud computing and virtualization. Often a service model, which maps the IT and application infrastructure to the related Business Services, is maintained in a Configuration Management Database (CMDB)—and the current method of populating and maintaining a CMDB does not meet the management needs in today's dynamic world. CMDB information needs to be updated when a change occurs, not on some pre-determined schedule.

- **Maximum automation:** Recent HP research puts the average cost of manually handling a single event at $75.[2] For organizations with hundreds or even thousands of events per day, costs can add up quickly. With a consolidated operations bridge—where a Run-time Service Model plays a central role—events are sent to a central console where they are automatically correlated, analyzed, and prioritized based on business impact. Combined with run-book automation, in which workflows are automatically run without the need for human intervention, IT organizations can now focus their attention on only those issues that truly demand it. The end result? Lower costs as fewer people are touching fewer events. In addition, fix times are reduced so business service levels are improved.

- **Enhanced collaboration:** In today's evolving IT environments—which are rapidly embracing and leveraging virtualized and cloud-computing technologies—multiple business roles and IT domains must collaborate to maintain service health. At the core of this, there needs to be a single source of truth—information delivered in a context appropriate to the role consuming it and based on the most current situation of the IT environment. IT also needs to deliver the right information to the right people, in the right context, where and when they need it. When all these requirements are met, full collaboration is possible.

- **Cloud and virtualization readiness:** Virtualization technology and private cloud computing increase the complexity in monitoring and managing IT environments. And public cloud can take control of the quality of IT Service Delivery out of the hands of IT. This is why it is more important than ever for IT to monitor service health from the perspective of the end user. By integrating end-user monitoring (top-down approach) with infrastructure monitoring (bottom-up approach), IT operations can now more effectively monitor service levels. If performance drops below predefined thresholds, IT rapidly and accurately resolves incidents by being able to trace the problem back to either its own IT environment—regardless if it is physical or virtual—or third-party cloud service providers.

How does the HP BSM solution address the changing needs of IT?

The HP BSM solution—unlike any other available in the marketplace—offers an integrated suite of products and tools that meet all of the requirements discussed above. Primarily based on products from HP Operations Center, Business Availability Center, and Network Management Center—the HP BSM solution also integrates with other HP products to provide companies of any size a complete solution for transforming their operations.

---

[2] Research conducted by HP at two VIVIT user group meetings during 2009.

HP BSM Run-time Service Model for accurate, automated, and comprehensive representation of the IT environment

Without the ability to relate infrastructure components, business transactions, and applications to the business services and service level agreements (SLAs) they support, how can IT effectively respond when problems occur? If multiple problems exist at once, how does IT know which one to work on first?

With the HP BSM solution, the core component that defines the relationships among infrastructure components, IT services, applications, and corresponding business services is the embedded **Run-time Service Model**. This component provides a topological configuration item (CI) and object storage repository that is used throughout HP BSM.

The **Run-time Service Model** contains collections of CIs and the relationships among them:

- **Business assets** include business services, processes, and activities. These include services that a business provides to another business (or one organization provides to another within a business) and that an IT organization provides to support business services or IT operations. A business service typically has an associated end user or customer, a business application, and an SLA. Examples include payment processing, backup and recovery, and self-service help desk.
- **Application and services** includes applications and their core components. These support a business activity, which is seen as a whole and is known by a specific name. This collection also includes infrastructure services that support business services and processes. Examples include voice and network, database, backup and restore, desktop, and Windows® administration services.
- **Software** includes individual installations of software elements. These are executables that are deployed on a logical system.
- **Infrastructure** includes logical systems such as virtualization and clustering and physical systems such as storage devices, network devices, and servers.
- **Facilities** includes locations, sites, buildings, rooms, racks, and so on.

The Run-time Service Model, a separate entity from any configuration management system (CMS) or CMDB solution, can be used by other HP Business Technology Optimization (BTO) centers beyond BSM. Configuration management differs dramatically from operations management. For example, performance requirements for operations are dynamic in nature, while performance requirements for configuration management systems are less dependent on information being updated in real time. Lifecycle and versioning requirements are also different between the two. Unlike other vendors, HP separates the CMS (CMDB) from the Run-time Service Model. By doing so, each one is used more effectively, and based on their applicable and different use cases, disruption of one does not impact the other, and each can be upgraded independently. The HP BSM Run-time Service Model, however, supports federation with the HP CMS solution—in addition to third-party CMDB solutions—so that it can easily be leveraged in use cases outside the BSM realm.
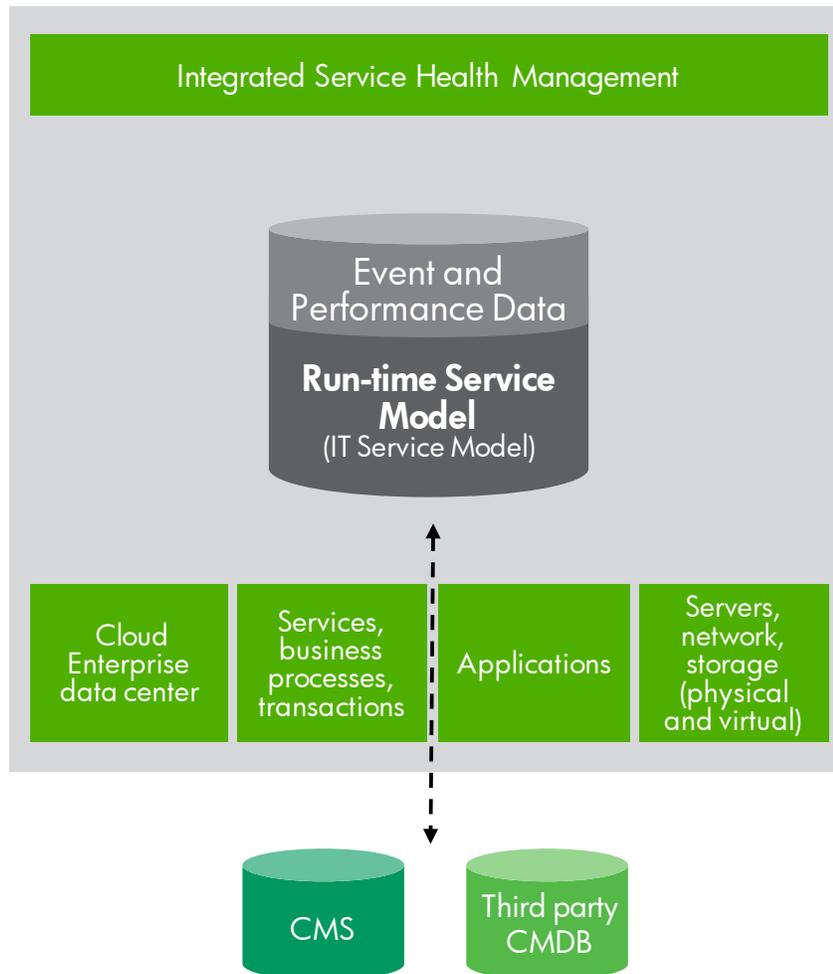
Timely population of the Run-time Service Model

Population of the Run-time Service Model is performed automatically using several discovery mechanisms:

- Monitoring an application as it is provisioned: For example, when HP End User Management (EUM) is configured for an application, the business transactions from synthetic monitoring scripts are automatically added to the Run-time Service Model and related to the application they support. Another example is when an SLA is added to a specific business application or collection of CIs. Once the relationship has been created from the provisioning effort, the model has been enriched.

- Using both agent-based and agentless data collection: Some examples include the relationship among servers hosting a hypervisor and associated guest virtual machines as well as application and database server software discovered by SPI discovery policies.
- Using BSM data collectors, such as HP Real User Monitoring (RUM), HP Diagnostics, and HP TransactionVision. When they encounter new software or infrastructure components, these collectors enter those CIs and any newly discovered relationships into the BSM Run-time Service Model or enrich current entries with new information.
- Federating with a CMS: The Run-time Service Model can be configured to push data to a CMS (scheduled push or forced manually, if needed) or to reflect a portion of the CMS within itself as a local copy (to support real-time BSM use cases). For example business services and applications modeling a service management solution could be imported into the Run-time Service Model to support business impact modeling.
- Relating a list of business services to applications and transactions being monitored: For example, where federation to service management data from a CMS is not available, through access to a list of business services (entered manually) and related (via a script) to the applications and transactions that are being monitored.

Figure 2: The Run-time Service Model tracks configuration items across all IT domains

The HP BSM solution leverages the Run-time Service Model in several important ways. The following is a partial list of common use cases:

- Topology map in service health: The BSM service health application can show a topological map of the business, application, and infrastructure elements with a real-time indication of their health. This provides an excellent visualization of service health.
- Automated discovery: The BSM Run-time Service Model can integrate directly with HP Discovery and Dependency Mapping (DDM), or the results of deep discovery can be federated to the BSM Run-time Service Model. HP SiteScope Monitoring Deployment Wizard uses the topology discovered by DDM when configuring monitors based on templates. The Monitoring Deployment wizard retrieves relevant information that the Run-time Service Model reports by DDM to help configure the monitors and assigns the monitors to the selected CIs.
- Sharing with a CMS: CMS topology can be populated by the HP BSM solution, other HP BTO solutions, or third-party centers. Synchronizing the topology from CMS to BSM is necessary for topology-based integration flows with other BTO or third-party centers. A good example is a service management use case. The BSM Run-time Service Model can be consulted for key performance indicator (KPI) status to show current state.

Figure 3: Example of a topology map leveraging the Run-time Service Model
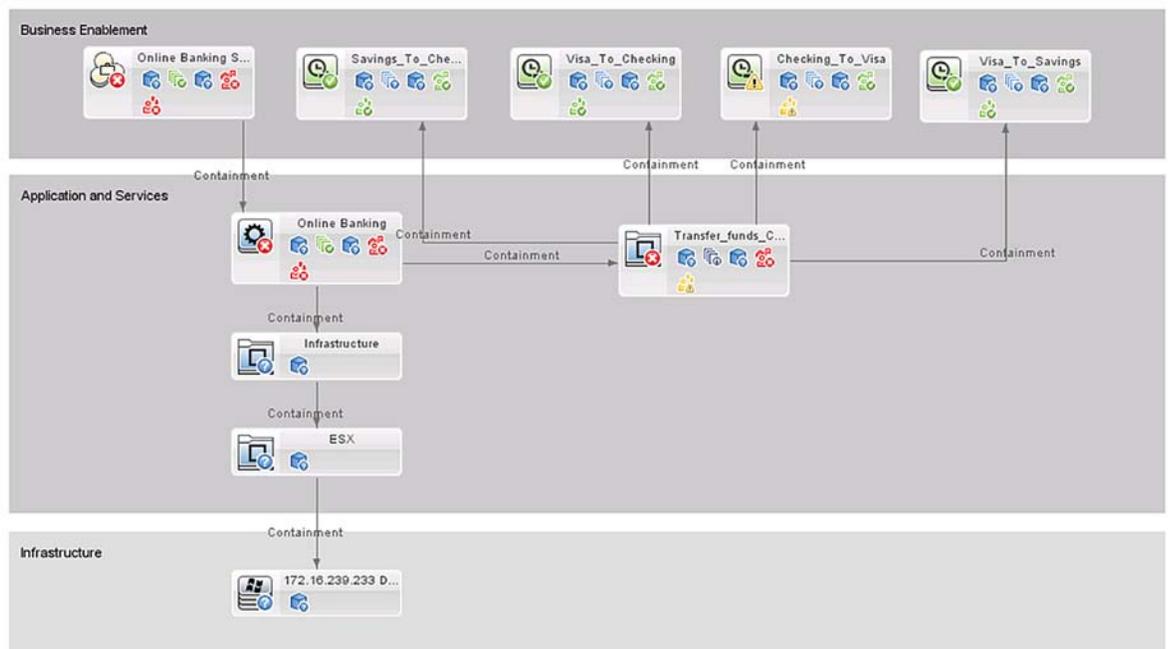
The Run-time Service Model is a foundational piece of infrastructure upon which the HP BSM solution is built. Leveraging this technology allows for the timely integration of data from the data collection mechanisms (agent-based and agentless) and the presentation of meaningful information by an operations console to enable the support of the business services in today's highly dynamic IT environment.

Automated operations for the entire IT infrastructure monitoring lifecycle

Event correlation: the key to automation

The HP BSM solution offers multiple mechanisms for event correlation, the most prominent of which are Event Correlation Services (ECS) and Topology-Based Event Correlation (TBEC).

ECS not only automatically searches for patterns to identify relationships between events, but also reduces a stream of events to a single enriched event (when a single failure causes a series of application, database, and networking faults). This stream-based processing automatically reduces noise in the event stream, correlates and groups duplicate events, and closes events associated with resolved issues. ECS automatically filters events and retains messages for a certain amount of time before they are issued to the console.

TBEC takes ECS to a whole new level of sophistication by automatically identifying causal events. This allows staff to focus on fixing the true causes of an incident (and reduce time spent chasing symptoms). Automated correlation at the server level means events are correlated from a cross-domain perspective—coming in from multiple systems including third-party monitoring tools—via both agent-based and agentless monitoring.

As HP knows from talking to its customers, the effort and level of knowledge required to configure and maintain rule sets for event correlation technology is very high. Typically, IT organizations deem it too expensive to maintain and thus downgrade what they are using for correlation. So they move to using only the simplest rules, which limits the value that can be delivered by the solution.

HP takes a different approach by using automation extensively within TBEC. Correlation rules, once created, usually do not need to be modified. Because they are abstracted from unique events and the specific infrastructure topology, they remain independent of any changes that are made to the infrastructure. In effect, TBEC automatically chains together a new set of correlation rules in real time for each set of related events, based on the latest discovered topology. The more up-to-date your discovery is, the more accurate the correlation. In addition, correlation models for individual technologies such as Web application servers, messaging, and databases can be developed independently by domain experts and automatically combined and leveraged together at run time.

Automated assignment and enrichment of events

To get each event to the appropriate operator, automated assignment rules can be used to assign an incoming event to the right operator or operator group based on the specific event that has arrived. This reduces operator effort by decreasing the frequency with which events must be reassigned manually to get it to the appropriate operator. It also means operators work on only those events that fall within their technical expertise.

In addition, through automated enrichment, instructions such as possible causes and solutions can be added to enhance the effectiveness of tier-1 operators and thus reduce the number of events escalated to SMEs.

Managing the dynamic environment

How do we know what parts of the business are impacted when a stream of events comes in? The HP BSM solution offers several methods of synchronizing business and infrastructure information to determine what parts of the business are impacted by a stream of events.

Operations Manager i—one part of the HP BSM solution—automatically relates event to CIs in the Run-time Service Model. OMi brings together the events and latest discovery data, allowing operations staff to get an accurate view of the dynamic environment and be in a position to effectively analyze business impact.

In addition, HP SiteScope agentless probes, SPIs, and DDMi all provide additional ways to discover changes—automatically and in near real time—in the managed infrastructure and to report these back to the Run-time Service Model. Take, for example virtual environments, which are very dynamic in nature because logical servers are constantly being moved from one physical host to another. Using the HP Virtualized Infrastructure SPI (VISPI), discovery is performed frequently and discovered information is passed from the VISPI through HP Operations Manager to the Run-time Service Model.

Prioritizing events to increase productivity and improve business service levels

Typically, IT operators handle so many messages that it is hard for them to know which one to work on next. With the HP BSM solution, operators are associated with pre-defined profiles, which allow them to stay focused on only those events that apply to their specific role. The operator then watches for a flag—which indicates recently introduced events and has a priority assigned to it based on a combination of the event severity and business impact. An event that affects a mission-critical business service gets a higher priority than an event that affects an important business service. In addition to automated prioritization, multiple actions can be combined and executed by an operator with a single mouse click, further increasing productivity.

Event management and automation for better business results

The HP BSM solution has multiple mechanisms for further prioritizing and handling events to reduce both downtime and management costs. First, operators can launch performance graphs that monitor metrics over time in the context of the event or a related CI or neighbor CIs. Actions are automatically started to further analyze the problem or resolve it. Simple actions can automatically be attached to events per pre-defined policies. More complex analysis or resolution flows can be linked to events using Operations Orchestration run-books. In any case, the results of those actions will automatically be documented as part of an enriched event. In addition, operators have a toolbox of event-specific tools to further analyze or remediate so they can fix problems before they impact the business.

The operations team escalates only issues that do not have pre-defined processes or automated fixes associated with them. Escalation happens on demand or automatically based on pre-defined event criteria. Event annotations—added when the event was processed by the Operations Bridge—are forwarded to the service desk, and actions performed by the application or infrastructure expert working at the service desk are documented and synchronized with the event available to the Operations Bridge. If an application expert closes an incident, for example, this is acknowledged and then sent to the event-history database for a complete audit trail.

Standardization and consistency to reduce costly errors

Automation also helps ensure consistency and control by enforcing policy-driven approaches to problem resolution. HP BSM automation tools make it possible to remove the human factor—manual intervention by operators, for instance—from lower-level issues. In addition, tasks are standardized and performed consistently, reducing costly errors. The end result is greater compliance with established IT governance policies, an improved ability to follow through on SLAs, and reduced operating expenses—all as a result of automation.

Collaborative operations for a consolidated, single source of truth

The HP BSM solution provides many capabilities to dramatically increase the level of collaboration between operators and SMEs—in the context of consolidated event management. Using HP Operations Center products, a diverse group of operators and SMEs easily and effectively collaborate through a single **consolidated event console**, where the volume of events handled by each of them, and the duplication of effort among them, can be greatly reduced.

Types of events that are consolidated

HP provides extensive capabilities for **event consolidation** and **cross-domain collaboration for a wide variety of events**, including:

- Application- and transaction-related events—such as alerts and KPI status change events affecting end-user performance from HP Business Process Monitor and Real User Monitor, and transaction performance degradation from HP Diagnostics, TransactionVision, and Business Process Insight (BPI)
- Network performance-related events from HP Network Node Manager i (NNMi)
- System performance-related events from sources such as HP Operations Manager Agents and HP SiteScope agentless monitors
- Storage-related events from HP Storage Essentials
- Events from HP Systems Insight Manager
- Events from third-party event management systems such as Microsoft® SCOM and VMware vCenter

HP BSM Run-time Service Model as the foundation for true consolidation

Consolidating and dealing with events relies on a single source of truth—essentially an accurate and up-to-date representation of what is happening in the IT environment at any point in time. This single source of truth is based on CI resolution of incoming events, which leverages the Run-time Service Model to automatically determine the CIs related to an event. Operators can filter events by CI to make sure the right people examine them for resolution, with the ultimate goals of tier-1 operators handling the majority of events and fewer people handling each event. The Run-time Service Model makes it possible to give people assigned to work on an event detailed information such as event context, topology, and health indicators from multiple domains.

The Run-time Service Model is also used to perform automatic business-impact analyses to determine which business services an event affects, assign an impact rating, and prioritize events based on the rating and severity of each event.

Customization to further enhance collaboration

HP BSM solutions provide information in a context appropriate to the role played by the worker who needs it. For example, line-of-business managers may want information on the value of transactions, while IT operators may seek early warnings on failing network components to fend off potential service disruptions.

This requires personalization or highly customized contextual views with select tools—provided through Web 2.0 mash-up capabilities (MyBSM) that enable IT personnel to select and use the right tools based on their role and the type of event they are working on. A components gallery with dozens of domain-specific components can be used to create individual MyBSM pages. The components on such a customized page can even be wired together to provide context-sensitive linking of the different displays.

Figure 4: Customized MyBSM page showing an event browser, topology map showing virtualized environment, and VMware Web Access console for troubleshooting a CPU issue
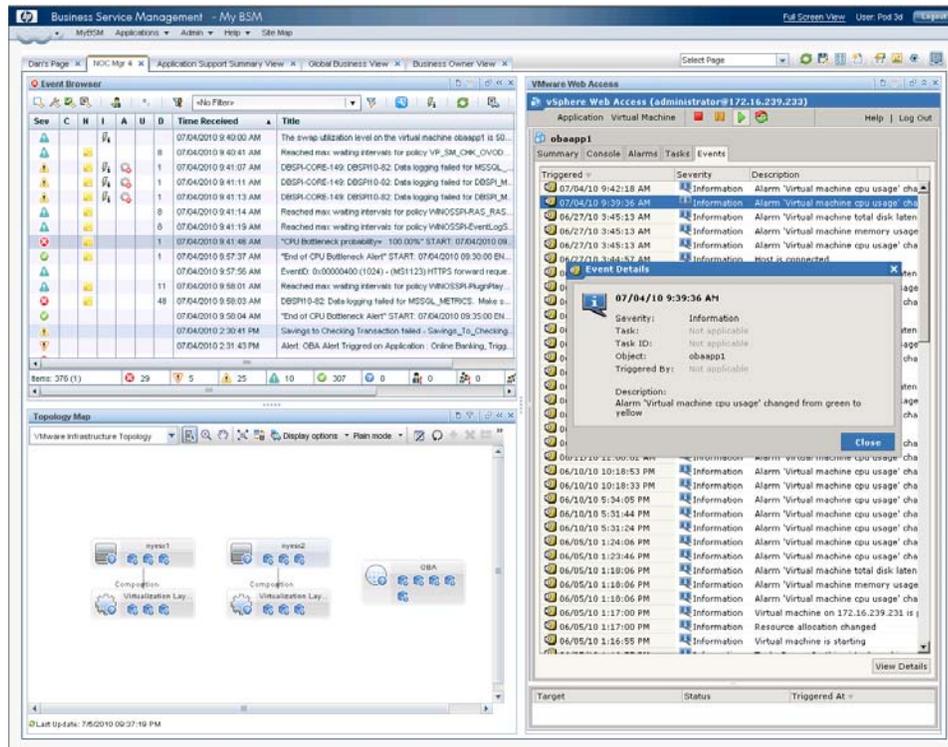
In addition, a component builder is also available to produce new components such as a component to access an external URL and display the retrieved html page. This enables enormous flexibility, as each operator or SME can personally customize views based on their role within the IT organization, including views of data from sources not directly provided by the HP software.

Collaboration among all IT team members—regardless of location

Increasingly, IT-related information needs to be shared across a distributed and mobile workforce. Using the HP BSM solution, engineers moving about data centers can receive alerts and status information via mobile devices, enabling them to handle issues promptly without returning to their desks. Or line-of-business managers can track transactions and the health of their applications while traveling. Whatever the scenario, the HP BSM solution delivers the right information to the right people where and when they need it—regardless of the devices they use to access that information.

Collaboration beyond typical BSM domains

The HP BSM solution also supports collaboration beyond typical BSM domains and into other systems such as HP and third-party solutions for incident management and business-service automation (BSA) systems. Integration with systems such as HP Service Manager for incident management includes bi-directional flow between HP BSM products and these systems, enabling automatic creation of service tickets, flow of ticket status among different tools, and synchronization between the incident-management systems and the event console when the service desk closes a ticket. For BSA, HP BSM integrates with HP Operations Orchestration to automatically launch workflows or run books (referred to as run-book automation (RBA). With this integration, incidents are diagnosed and fixed without human intervention, and, if a workflow does not exist, Operations Orchestration provides guidance— typically authored by SMEs—to IT personnel performing manual diagnosis and remediation.

Cloud- and virtualization-ready operations for faster problem resolution in dynamic environments

The trend today is to buy technology-enabled services via the cloud. Cloud services are ready-to-use, highly scalable, elastic services delivered and consumed over the Internet or an intranet on an as-needed, self-service, pay-as-you-go basis. Functions such as provisioning, configuration, process automation, resource management, and service monitoring are critical issues when employing cloud services. Cloud computing, when combined with virtualization, adds an additional layer of complexity to all these functions, and requires more attention to infrastructure management to ensure service quality. Vendors like VMware and Microsoft provide infrastructure management tools, but these typically do not address the comprehensive heterogeneous management needs of mission-critical business applications. With the HP BSM solution, dynamic environments—from a management perspective—are integrated into the operations bridge.

Figure 5: The virtualized environment—another piece of the infrastructure
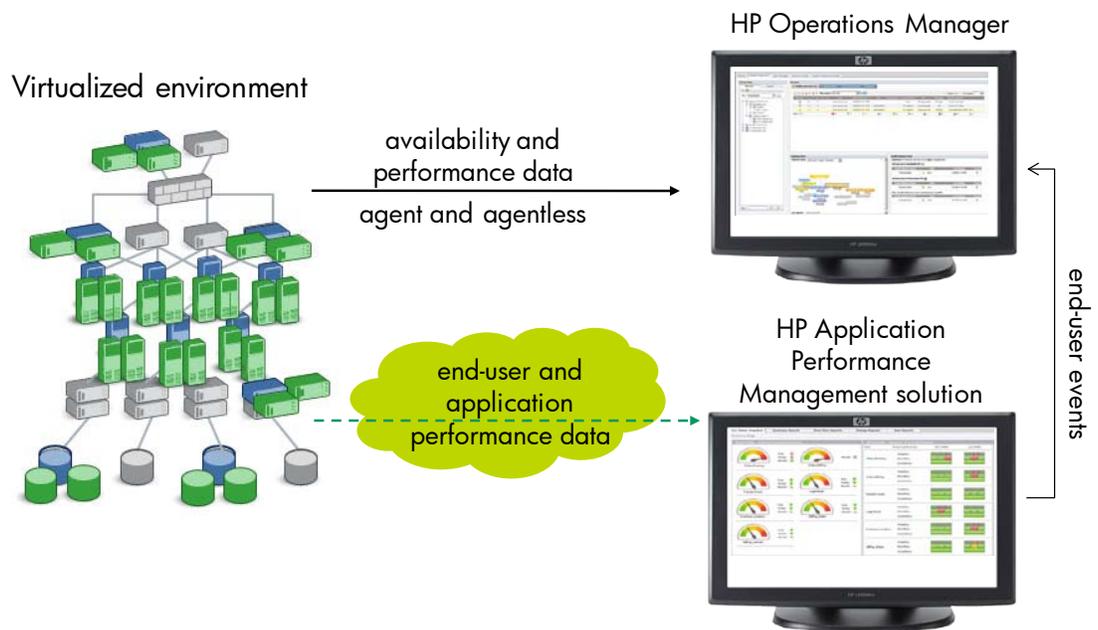
The dynamic nature of both virtualized and cloud environments means that providing readily accessible, accurate, comprehensive, and up-to-date information revealing infrastructure usage and how CIs relate to each other is of paramount importance. The agent-based discovery architecture of HP BSM tracks and updates changes in these types of environments in near real time. This information is maintained and updated in the Run-time Service Model, which contains important information about hosts, resources, applications, networks, services, and all interdependencies among CIs. Each set-up or status change is automatically detected and reported.

Taking back control of your business services

While public cloud services give IT greater ability to flex capacity based on changing demand, it also can take direct control of infrastructure resources out of the hands of IT. This is why it is more important than ever for IT to monitor service health from the perspective of the end user.

HP provides two approaches for end-user monitoring. First, synthetic monitors run defined transactions, detect issues, and report those issues back to IT before end users feel the impact. Second, real-user monitors listen to network traffic and gather data that captures actual real-time user experience. This data then goes into an analysis engine that generates actionable information on a variety of user-experience metrics such as transaction round trip time, application availability, errors experienced, and more.

End-user monitoring also helps IT identify service levels that are in jeopardy of being breached. When performance drops below predefined thresholds, IT can trace the problem back to either its own on-premise infrastructure or to third party cloud services—allowing for much more rapid problem resolution.

Virtual environments mean management of multiple technologies

HP SPI technology—used in conjunction with HP Agents—collects event and incident related information, server status information, performance data, and configuration information. All of this data is used to detect changes or identify critical trends. Based on defined thresholds, proactive actions such as assigning additional resources to a guest system or moving guests to other hosting systems can be initiated. HP also offers agentless data collection using HP SiteScope for situations where agent-based data collection is not needed.

Thresholds will change and applications will move

The dynamic nature of virtualized and cloud environments necessitates advanced monitoring and threshold capabilities. HP Operations Manager, one product in the HP BSM solution, leverages baseline capabilities to allow for the automatic adaptation of monitors based on historical values. In addition, application and system monitors available from HP (application-specific SPIs, SiteScope monitors, and so on) provide capabilities to further enhance the monitoring of applications as they move within virtualized environments.

Efficient and fast problem isolation

Often a single problem has a ripple effect throughout the IT environment. With virtualized and cloud environments, the number of areas that a problem touches increases dramatically; a simple change like starting a new guest system can have significant impact on the response time of other systems running on the same host system. To speed resolution of problems in these types of environments, it is essential to identify the real cause as quickly as possible. The HP central console and powerful event correlation technology do this, informing IT staff of dependencies and enabling them to isolate problems and assign the appropriate resources.

Automation for timely and accurate monitoring of cloud and virtualized environments

For virtualized and cloud environments to be managed effectively and deliver on business service levels, monitoring tools must gather timely and accurate information. Automation is the only way to accomplish this in a dynamic environment. HP BSM, through tight integration with the Run-time Service Model, allows the various focused monitoring solutions to work in concert with automated actions and tools. This enables dynamic environments to perform no differently than the traditional distributed environments that were much easier to monitor.

Managing cloud and virtualized environments from a business perspective

HP BSM allows IT organizations to measure success by monitoring transactions that span multiple applications and complex infrastructures, enabling them to understand the business impact of services they are delivering, and providing detailed reports about their delivered services. This ability far exceeds what can currently be delivered by the providers of virtual and cloud environments. IT needs to understand the business impact of services that are being delivered by virtual and cloud environments, and not be limited to the infrastructure management typically provided by third-party tools.

Use cases

Use case: providing agility in the virtualized datacenter to support business needs

HP BSM is monitoring every aspect of business applications in an entirely virtualized data center—including networking, servers, storage, application health, and user experience. The SLA trends look great, and IT has proven to the business that consolidation has improved performance and availability of key business applications.

Late Friday evening, IT gets a call from a line-of-business owner who wants to confirm that IT can support a new ad campaign—which has to go live later that night. IT learns that original load projections were low: there will be three times more visitors to the site than originally projected. And the IT team has to confirm, within the hour, whether the applicable application can scale accordingly.

The 100 percent virtualized application has been deployed and tested and is currently being monitored by HP BSM. A private cloud-based service provides the order-taking function of the application, and after examining its resources using the HP BSM Topology Map IT finds that two application servers support the application, each with 2 CPUs and 8GB of memory. The IT team leader quickly consults his personalized MyBSM page, which shows the application health along with direct links to the application performance testing reports. One report shows the application scales linearly to 8 CPUs per server. So IT decides to simply double the CPUs allocated to each server by launching an HP Operations Orchestration run-book and using another flow to deploy an additional application server instance.

The team leader gets a call immediately from a monitoring colleague. Infrastructure monitoring has reported a change of resources: the topology map has updated, and there are now three instances of the new application. He also points out that virtualization software has moved the virtual machines for the application to another host due to the fact that there was planned maintenance going on today.

Let's look at how the HP BSM solution helped:

- HP BSM end-user monitoring configurations did not have to change as a result of the deployment of new resources.
  - Synthetic Monitoring (BPM) used the same main URL of the application, which did not change.
  - Real User Monitor automatically picked up traffic that found its way to the third application server instance.
- The Operations Orchestration run book, which ran automatically, deployed a new application instance with little risk from a complicated procedure like adding resources.
- An HP Diagnostics agent automatically deployed along with the application image.
- The new application instance was instantly monitored through HP Operations Manager automated discovery policies.
- The HP Virtualization SPI immediately reported that resources were added, and updated the Run-time Service Model with the new hosting environment.
- The movement of virtual machines did not require any manual monitoring updates. The HP BSM solution simply updated its Run-time Service Model accordingly.

The team leader calls the line-of-business owner, who has been anxiously waiting for good news, and tells him resources have been updated to support the projected traffic. The line-of-business owner is very grateful and his team decides to go live.

IT's agility allowed the business unit to quickly roll out a new revenue-generating initiative. And data center virtualization and the highly integrated and automated tools within the HP BSM solution reduced what would likely have meant a weekend of work into a few minutes of effort.

Use case: proactive monitoring equates to positive customer experiences

Customers using Internet-based business services expect quick response times. When response times are long or the service is down, they often switch to a competitor. Online services experience constantly fluctuating demand. As traffic patterns change, so must resources available to support those services. And if there is a problem with a single server, another server must be immediately ready to take over the load. Virtualization and cloud computing address these needs, and thus online businesses rely heavily on these technologies.

So how does an online business ensure only positive experiences for its customers? It needs tools to proactively monitor and manage the end-user experience.

In order to prevent problems that affect customer satisfaction and loyalty, IT has to understand the end-user experience by effectively simulating user behavior and monitoring actual real user experiences. HP Business Process Monitor software enables IT groups to simulate typical use cases of services such as online shopping carts through the use of synthetic transactions. By monitoring these synthetic transactions through the centralized console, the operations team receives an early warning in the form of an end-user experience event. Then, they can work to resolve potential problems before real customers are affected. To supplement this insight, HP Real User Monitor enables IT to experience the entire online shopping process just as a customer does, proactively identifying potential problems and fixing them before they impact end users.

For example, suppose HP Business Process Monitor or Real User Monitor is indicating a potentially poor customer experience such as checkout times for an online shopping cart falling below the SLA. The operations staff needs to identify the cause. As they prepare to resolve the issue, they use information collected from the HP Virtualization SPI in conjunction with HP Operations Manager, TBEC, and the Run-time Service Model to pinpoint the cause. Because of manual processes, a new virtual machine image has accidentally been started on the same host server as the database server virtual machine image, both of which serve the online shopping cart. This new virtual machine image appears to be consuming additional resources so that the database image is not performing well. And this in turn is causing slowdowns during the checkout process.

Having quickly identified the problem, the operations team uses automated, predefined run-book workflows developed by SMEs in HP Operations Orchestration to resolve the problem before SLAs are breached.

Figure 6: Bottom-up and top-down monitoring provides comprehensive monitoring of any IT environment
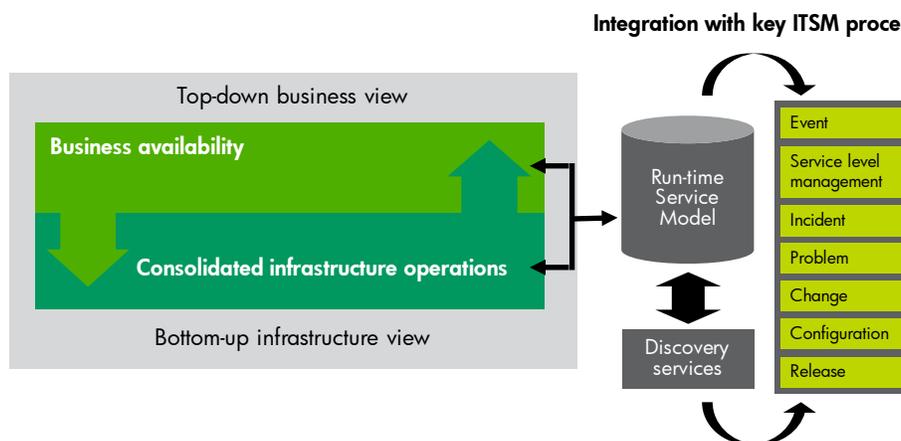
Your next steps to BSM

So what should your next steps be? The three main things you should consider doing are:

- Automating wherever possible
- Minimizing the workload of both operations staff as well as subject-matter experts
- Driving consistency throughout your IT organization

HP can help you accomplish this. Based on your current IT environment and your future plans, we can craft a BSM solution that will help your IT organization transform operations to drive business innovation throughout your company. By evolving from the traditional model of planning, building, and running to becoming a strategic broker of services, you'll not only be able to deliver those new and enhanced services that management is asking for, but you will also demonstrate your group's value within the organization.

To discover how you can drive business innovation with HP Business Service Management solutions, check out
www.hp.com/go/bsm

Share with colleagues

Get connected
www.hp.com/go/getconnected
Current HP driver, support, and security alerts
delivered directly to your desktop