



## Six steps toward assuring service availability and performance.



March 2008

## Contents

- 2 Overview**
- 2 Challenges in assuring high service availability and performance**
- 4 The need for a closed-loop approach**
- 6 Six steps toward assuring service availability and performance**
  - 6 *Step one: Monitor the service infrastructure***
  - 8 *Step two: Measure the customer experience***
  - 8 *Step three: Identify the service dependencies***
  - 9 *Step four: Track KPIs***
  - 10 *Step five: Provide business and operational service views***
  - 11 *Step six: Support automated action in real time***
- 13 Best practices for closed-loop, service-centric operations**
  - 13 *Planning***
  - 14 *Deployment***
  - 14 *Improvement***
- 14 IBM solutions for improved service availability and performance**
- 16 Summary**
- 16 For more information**
- 16 About IBM Service Management**

### Overview

In today's business world, the proper management of business services has become a key factor in delivering more and better services, managing risk and compliance, maximizing return on investments and accelerating business growth. This white paper introduces the importance of visibility, control and automation for service management, and it defines six key steps to enhance service availability and performance. Also included is a review of best practices for the successful design, implementation and refinement of enhanced service delivery solutions.

### Challenges in assuring high service availability and performance

“Are my Web pages loading properly? What about slow or missing responses? Are performance problems being detected and resolved as soon as possible? How do I identify the root cause across technology silos and tools? What is the actual impact of infrastructure problems on business services?”

These questions and more are on the minds of today's operations teams and the line-of-business (LOB) managers they support. Assuring service availability and performance has become critical to business success. But the breadth and flexibility of technology that enables more robust and diverse service for users also introduces new management complexities. This creates a visibility gap that makes it harder to understand and assure the quality of service being delivered to the customer. Additionally, proper control and automation of the underlying business service infrastructure have become increasingly difficult as these infrastructures continue to grow in size and diversity.

### Highlights

LOB managers are increasingly demanding greater service intelligence, including access to real-time and historical KPIs and report detailing

Limited visibility, control and automation are unacceptable in modern, service-driven organizations. LOB managers are increasingly demanding greater service intelligence, including access to real-time and historical key performance indicators (KPIs) and report detailing. They also need to know transactional revenue by type and region, customer experience metrics and service level agreement (SLA) tracking that details operational delivery against commitments. At the same time, IT operations teams need real-time insight into transaction performance, service status, call volumes and other indicators, as well as automated analysis of cross-domain root cause, and the business impact of infrastructure problems on service quality.

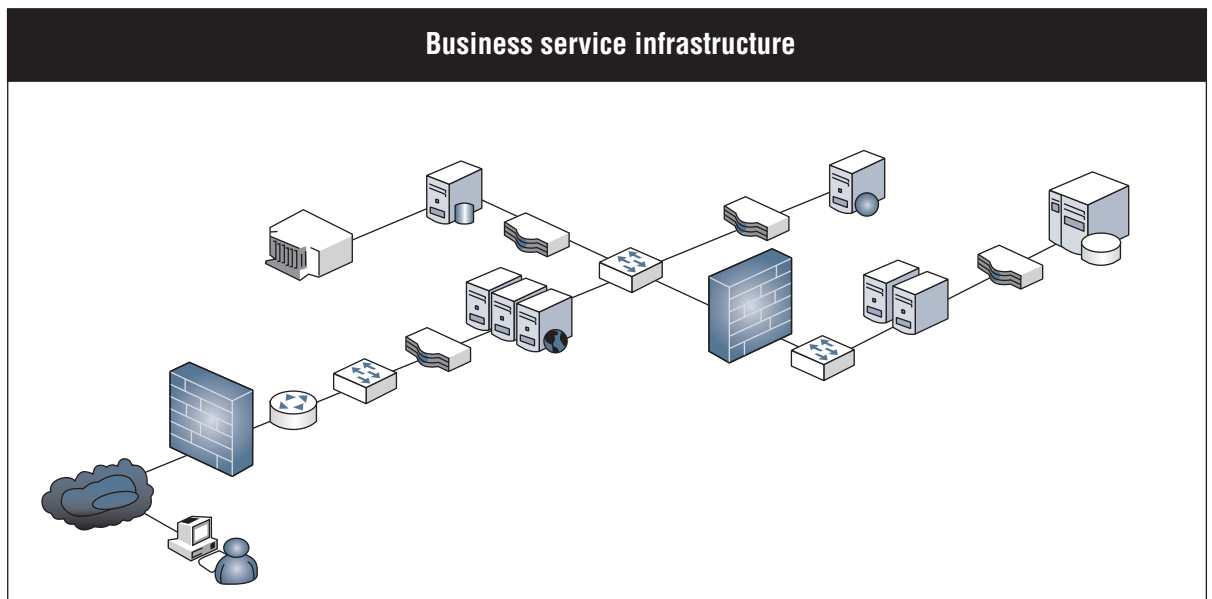
To support these needs, IT operations teams must be able to accomplish the following:

- Leverage existing tools and technologies to streamline processes across silos and increase operational efficiency.
- Manage information technology in a service context for prioritized response according to true business impact and improvements in the customer experience.
- Track delivery against key performance and service level indicators to assure that commitments with the line of business are being met or exceeded.

Unfortunately, serious challenges often stand in the way of improved service availability and performance. All too often, existing management tools are silo-specific, not integrated and lack service context. They also cannot effectively scale to manage the volume of events created across end-to-end service infrastructures. Further, processes are not closed-loop, creating disconnect across operations teams and increasing mean time to resolution (MTTR). Finally, cross-domain correlation and analysis is typically a manually intensive process and lacks the policy-based management needed to take

automated corrective actions that can help maximize service availability, performance and integrity.

In short, operational and business audiences can clearly understand the challenges associated with assuring high-quality services, but they often lack the integrated, service-centric management approach needed to make their service goals a reality.



*Service availability and performance require integrated visibility, control and automation across the complex service infrastructure that includes applications, systems, networks, security, storage and mainframe environments.*

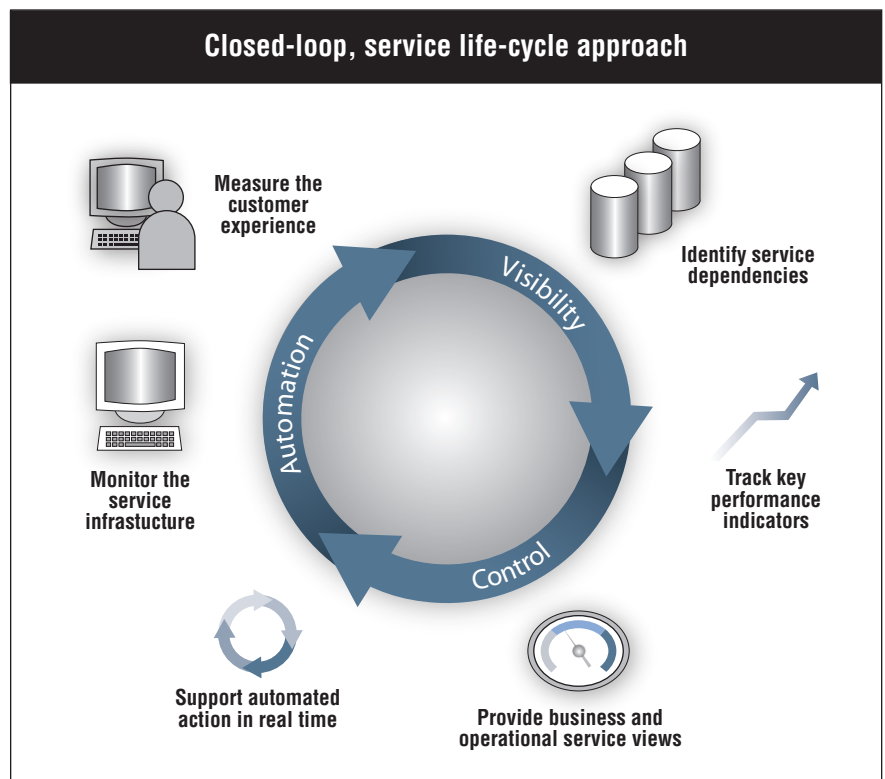
#### **The need for a closed-loop approach**

Assuring service availability and performance demands integrated service *visibility, control and automation*, working together in a closed-loop, service life-cycle approach. Visibility enables business and operational audiences to “see their business.” Control helps organizations “manage business and technology assets.” Automation helps “build agility into operations.”

Let's look at these three terms in greater detail.

In a closed-loop, service life-cycle approach, visibility should be supported by role-based dashboards showing business and operational views across the enterprise. These dashboards gather and consolidate intelligence to optimize individual and group productivity. They share data across teams to help minimize disconnect. They also drive rapid, more effective decision making in support of business and operational objectives.

Control can be increased through solutions that leverage and integrate existing point management tools to minimize operational disconnect, correlate cross-domain root cause across domains, and prioritize staff response based on the true business impact. Measuring and managing against key performance and service level indicators further improves control of service availability and performance while increasing accountability and operational effectiveness.



## Highlights

Automation can be increased through a mix of policy-based actions and run-book automations that improve intertool communication, respond to known problems independently, and automate tasks and processes. As a result, organizations can minimize the need for manual intervention, reduce new labor requirements and improve service quality through faster MTTR.

### **Six steps toward assuring service availability and performance**

Integrated visibility, control and automation enable organizations to improve delivery against service availability and performance objectives, helping them answer three important questions:

1. What is happening with the infrastructure?
2. How does this relate to the business service?
3. What actions do we need to take to correct the problems?

The right solution should fully leverage the existing business service infrastructure while addressing business needs and IT requirements that are unique to the organization

The right solution should fully leverage the existing business service infrastructure while addressing business needs and IT requirements that are unique to the organization. However, almost any solution for enhanced service availability and performance involves the following six steps:

#### ***Step one: Monitor the service infrastructure***

A critical component in understanding the health of a service is the instrumentation of all the components that make up that service. Most organizations have some form of monitoring in place across the various technology silos that make up a service. Discovery information should be used to perform gap analysis of monitoring applied to each identified technology component. Monitoring should then be applied across the full range of technology dependencies to assure complete coverage of all potential service-impacting events.

## Highlights

As we gain an accurate understanding of the health of all the individual infrastructure components that make up a service, the volume of events that must be managed in a service context begins to increase dramatically, from tens and hundreds of thousands to millions of events per day. This is true even with some form of effective correlation already taking place at the domain level. It is therefore critical to have a highly scalable means of consolidating and correlating events across existing silos and monitoring tools.

An organization's event management solution should allow for rapid integration of existing tools, without the need to "rip and replace" existing point management tools. It should also provide a consolidated, single-pane-of-glass view of events from any data source. This view should include the availability, performance and integrity of the individual service infrastructure components across application, system, network, mainframe, storage and security domains, as well as business activity sources.

Further, to effectively manage and correlate high volumes of potentially service-impacting events, organizations need a way to improve the quality of information provided by collected events. Event enrichment allows organizations to take monitoring and event management to the next level by adding the necessary service context to an event. A traditional event may not provide information on what service it supports – for example, where a configuration item (CI) is located physically, who owns that CI and other vital information such as contact details for support. It is therefore important to note that consolidated event management provides a critical first step in understanding the health of the service infrastructure, although by itself it does not provide a complete, end-to-end view of what is happening with the service.

Consolidated event management provides a critical first step in understanding the health of the service infrastructure

***Step two: Measure the customer experience***

When a customer or end user performs a transaction, that transaction can touch virtually every supporting component of a service. Transaction monitoring is an important step for service visibility because it helps organizations understand the real-time availability and performance of the service as a whole, from the end-user perspective. With transaction monitoring in place, we can immediately tell that there is a problem with the service, even without visibility into the individual service infrastructure component health. However, transaction monitoring alone does not provide the full service context needed to rapidly identify the root cause and understand the business impact of service problems.

***Step three: Identify the service dependencies***

To truly manage a complex business service, organizations need to understand the actual service infrastructure and its dependencies. Service modeling is a critical step toward effective service management, providing this link between business services and the underlying infrastructure. It also drives the automated analysis needed to proactively manage and assure service availability and performance.

As we mentioned in step one, discovery identifies the configuration items that support a service, but more importantly, it provides the configuration details, including all of the application, system and network dependencies needed to troubleshoot service problems more quickly. When integrated into real-time service modeling tools, discovery should auto-populate and maintain service models. Consequently, the service model remains accurate and representative of the true production environment, even as the service infrastructure changes configuration. Historically, this has been a huge challenge for many service modeling tools, which lack an automated way of mapping and maintaining service maps, making them highly maintenance-intensive.



## Highlights

Organizations need to identify all relevant operational and business indicators — those that provide true insight into service performance according to the requirements of each audience

Discovery also plays an important role in supporting closed-loop service visibility, control and automation, helping recover lost and underutilized assets needed for effective asset management. In addition, it provides configuration management databases (CMDBs), event management, and other tools with accurate configuration details and the change tracking needed to improve MTTR. This is critical, because as much as 80 percent of service problems are the result of changes to the service infrastructure.

### ***Step four: Track KPIs***

To effectively manage service performance, we need to know as much as possible about what is important to the business and operations teams. Then we need to track against those critical indicators. For instance, how do we really know the business is getting the service levels expected? How do we know everything is operating and performing as expected? To answer these questions, organizations need to identify all relevant operational and business indicators – those that provide true insight into service performance according to the requirements of each audience.

The service modeling tool needs to be able to collect real-time and historical indicators from a diverse array of existing data sources, such as customer relationship management (CRM) and enterprise resource planning (ERP) databases, service oriented architecture (SOA) environments, middleware and custom applications. The tool should also be able to correlate business activity data to derive the valuable operational and business indicators needed to deliver actionable service intelligence by audience. Important indicators might include transaction volumes by type, call volumes by region, trouble tickets by severity and revenue figures. Business activity monitoring and indicators can provide valuable insight beyond service infrastructure status, helping to

identify developing service problems and to prioritize response based on true business impact before they impact the customer or end user.

***Step five: Provide business and operational service views***

Lines of business and operations need contextual service visibility that links infrastructure to corresponding services, processes and customers. At the same time, business and operational audiences need actionable intelligence that includes transactional, compliance, revenue, service level and other success indicators required to effectively manage ongoing delivery against objectives.

To assure effective service visualization, business and operational views should be driven through a single, effective interface that leverages the same underlying service model. The underlying service model and service views should allow for integration of existing tools and information, regardless of source. Further, service views should be Web-based and customizable to enable flexible delivery of intelligence by target audience.

Service views should draw on existing event and business activity information from underlying tools and data sources while at the same time automatically generating a “balanced scorecard” of KPIs. Balanced scorecards are important because they show the relational impact of changes in underlying data. They also automatically update KPIs across business and operational views to help ensure that both audiences are working from the same up-to-date intelligence.

Business views should provide balanced scorecards and KPIs. LOB audiences need to make informed decisions and effectively manage profit and loss based on revenue, transaction, customer, bottleneck, call volume and other vital indicators.

## Highlights

Operational audiences should have the ability to customize views in an integrated, relational service view. This view should include a mix of balanced scorecards; real-time and historical indicators; service dependency maps; event lists; process workflow diagrams; custom gauges, charts and graphs; geographic, location and floor plan maps; and topological views. Service views should also include SLA tracking and KPIs such as time to SLA breach, downtime to date, cost of downtime and so forth. This helps ensure SLA compliance for services, processes, transactions and the supporting service infrastructure.

### ***Step six: Support automated action in real time***

A closed-loop approach requires the ability to automate actions in response to developing service availability and performance problems. This is a critical step which can leverage and improve return on investment on a variety of existing operational management tools.

One key challenge in assuring the availability and performance of services involves the time it takes to identify the root cause of service problems across technology silos, event storms and point management tools. Further, not every event is truly service impacting. For example, two servers in a server farm could be taken offline for maintenance, but eight could remain in service and that number might be enough to provide high-quality, continuous service. In contrast, if three servers in the same server farm were to receive patches that inadvertently caused them to crash, the service state might become marginal or, worse yet, critical. Therefore, organizations need a way to identify which events are truly service impacting; that is to say, those that affect the availability or performance of a service in a way that breaches SLAs or other service performance objectives. Then they need to prioritize response accordingly.

Organizations need a way to identify which events are truly service impacting — affecting the availability or performance of a service in a way that breaches SLAs or other service performance objectives

When developing service problems are detected, it is also important to be able to manually trigger a variety of actions directly from the service views. Service views should enable support tools to be launched in context to support scenarios such as the following:

- Viewing configuration details from a CMDB.
- Opening an incident in the service desk.
- Viewing device location in an inventory system.
- Opening a change request in the service request system.
- Restarting a device.
- Pulling up trend reports from a performance monitoring tool.
- Accessing change history from a CMDB or discovery tool.

To deliver continuous service availability and performance, it is also important to leverage operational automation solutions that provide self-detecting and auto-correcting capabilities based on predefined conditions and policies. These solutions enable organizations to automatically respond to disruptions and eliminate the need for error-prone manual intervention, thereby helping to improve availability, lower costs and speed time to recovery.

Key operational automation capabilities include:

- System automation to coordinate the stopping and restarting of systems and application components that span heterogeneous environments.
- Automated alert and escalation to help communicate and resolve problems in a timely manner.
- Workload automation to trigger and dispatch workloads to the best available resources and to respond dynamically to changing business demands.
- Automated software distribution to assure monitoring of new service components as they become live in production.

- Provisioning of servers and applications to support additional service capacity requirements.
- Cross-tool automation that enables activities like automatically closing incidents and problems in the service desk once a change request has been executed and clearing the related critical events in the service model.

With the appropriate integration of tools, actions can be automated for impact analysis, task initiation, configuration, activation, orchestration and other activities. These automations can dramatically shorten MTTR, reduce capital and labor costs, and improve service delivery quality.

#### **Best practices for closed-loop, service-centric operations**

Keep in mind that the six steps outlined in this white paper are all part of a continuous process that supports the service delivery life cycle. Closed-loop analysis of results can be used to refine, improve and adjust the process.

When undertaking these six steps, organizations should consider the following best practices:

#### ***Planning***

Pick the most important business service and begin there. Include business and operational audiences in the process up front. Success will depend on buy-in at every level, so identify key constituents such as LOB managers, the CIO, operations leaders and domain administrators. They should be part of the entire process, according to their roles and responsibilities. For each audience, identify what metrics are most important and what constitutes a true business-impacting service problem.

### ***Deployment***

Lay out a logical mapping of the infrastructure and its relationship to the service. Evaluate your current infrastructure and customer experience monitoring and event management capabilities against your larger service availability and performance requirements. This helps to ensure that tools provide adequate coverage for your environment. Select a service visualization and analysis solution that can integrate your existing tools and data sources. Automate service modeling, impact and root-cause analysis. Track all defined KPIs by audience. Deploy the solution against established baselines for service performance and deliver targeted service intelligence that meets the specific needs of each target audience.

### ***Improvement***

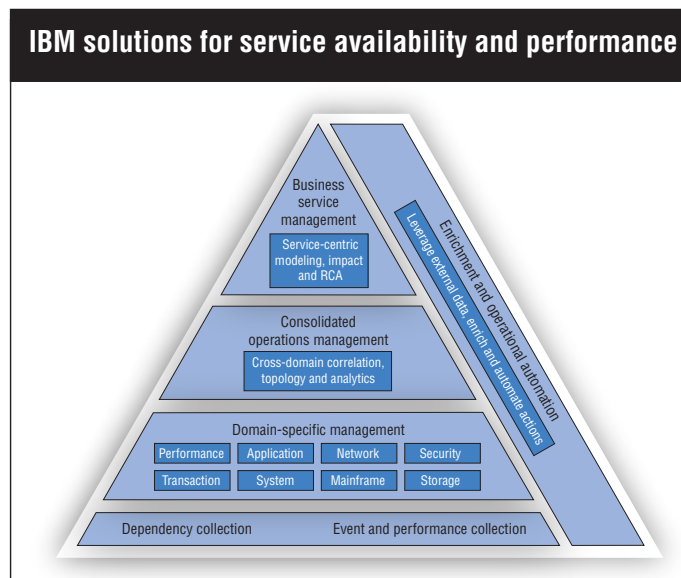
Review delivery against SLAs and other predefined success indicators. As your knowledge base increases, increase autonomous actions to minimize the need for manual intervention and further improve MTTR. Plan future service investments and SLA commitments with the LOBs according to actual need and consider charging accordingly to transition from a cost center to a profit center.

### **IBM solutions for improved service availability and performance**

IBM is uniquely positioned to help today's organizations develop tightly integrated, end-to-end service availability and performance management strategies.

Solution capabilities include:

- **Dependency collection** that ensures end-to-end visibility of service infrastructure dependencies from layer 1 through layer 7. IBM solutions provide the broadest, out-of-the-box discovery available.
- **Event and performance collection** across application, system, network, mainframe, security and storage environments, along with status collection which includes availability, performance, integrity and business activity.
- **Domain-specific management** that delivers proactive monitoring and management of distributed and mainframe environments.
- **Consolidated operations management (COM)** that optimizes operator productivity and effectiveness with a single-pane-of-glass solution across operational silos, backed by an ultrascaleable event management and analytics engine.
- **Business service management** that improves responsiveness with targeted business and operational dashboards, service modeling, and root-cause and impact analysis, helping to provide real-time visibility and control across the enterprise.
- **Enrichment and operational automation** that improves staff productivity and effectiveness by adding deeper context to existing monitoring and correlation tools and triggering automated actions for improved service availability and performance.



IBM solutions for service availability and performance provide the necessary monitoring, consolidation, service-contextual analysis and automations needed to help assure high service quality and deliver against SLA commitments.



## Summary

Only IBM can provide such a broad array of modular yet fully integrated service management technologies, products and services. And only IBM provides such a high level of experience, technical knowledge and expertise to deliver true, enterprise-level service management solutions.

With IBM, organizations can develop enhanced service availability and performance solutions to dramatically improve visibility, control and automation, while maximizing the performance and lifetime value of all business assets across the enterprise.

## For more information

To learn more about IBM solutions for enhanced service availability and performance, contact your IBM representative or IBM Business Partner, or visit [ibm.com/itsolutions/service/management](http://ibm.com/itsolutions/service/management)

## About IBM Service Management

IBM Service Management helps organizations deliver quality service that is effectively managed, continuous and secure for users, customers and partners. Organizations of every size can leverage IBM services, software and hardware to plan, execute and manage initiatives for service and asset management, security and business resilience. Flexible, modular offerings span business management, IT development and IT operations and draw on extensive customer experience, best practices and open standards-based technology. IBM acts as a strategic partner to help customers implement the right solutions to achieve rapid business results and accelerate business growth.

© Copyright IBM Corporation 2008

IBM Corporation  
Route 100  
Somers, NY 10589  
U.S.A.

Produced in the United States of America  
March 2008  
All Rights Reserved

IBM, the IBM logo and Visibility. Control. Automation. are trademarks of International Business Machines Corporation in the United States, other countries or both.

Other company, product and service names may be trademarks or service marks of others.

**Disclaimer:** The customer is responsible for ensuring compliance with legal requirements. It is the customer's sole responsibility to obtain advice of competent legal counsel as to the identification and interpretation of any relevant laws and regulatory requirements that may affect the customer's business and any actions the reader may have to take to comply with such laws. IBM does not provide legal advice or represent or warrant that its services or products will ensure that the customer is in compliance with any law or regulation.