

IBM
Challenges
Availability
Management
Status Quo

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White
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To keep up with the demands of dynamic, on demand environments, CIOs and their business partners need a new approach that integrates availability, performance and problem management processes and tools in a more collaborative and real-time way. In particular, IT staff needs to be able to:

- Share accurate and timely availability and problem management information with all relevant IT staff;
- Automate workflows and hand-offs across all activities;
- Quickly assess end-to-end service availability and performance dependencies;
- Enable teams made up of experts from different domains to work together effectively;
- Tie operational responses and policies directly to the end-to-end business service impact of the specific problem; and
- More proactively detect and remediate problems before they affect service.

IBM's recent availability management announcements reflect its commitment to ITSM and IT lifecycle management. The announcements introduced several new products that significantly expand Tivoli's visibility into composite application environments and provide customers with powerful visual, collaborative workspaces. Customers can quickly deploy the products individually or utilize an IBM-provided roadmap for integration into a more comprehensive ITSM framework when they're ready.

Integrated problem, performance and availability management is a major mental and operational shift in the way IT staff execute their day-to-day jobs and document their contributions to the business. It requires cultural transformation, process modifications and tools upgrades to deliver on the promise of process-centric end-to-end IT service management.

Most organizations should expect to implement integrated availability management over a two to five year timeframe, depending on the scale and complexity of their existing environment. Organizations with aggressive commitments to composite applications may need to move more quickly to assure they are equipped to support these dynamic environments on an end-to-end basis.

IBM has done a good job of packaging old and new Tivoli products into a broad-based collaborative package that should help customers operate more effectively in dynamic, composite application environments. Whether your organization is ready for a full-blown ITSM transformation or just wants to upgrade its ability to collect and share critical availability and performance information, IBM's availability portfolio deserves consideration.

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IBM's recent endorsement of process-centric IT service management and IT lifecycle management got a booster shot with its September 2005 introduction of an upgraded availability management portfolio. Seeking to extend Tivoli's availability management capabilities well beyond the traditional confines of IT component monitoring and performance reporting, IBM introduced a set of ITIL-based reference models, tools mentors, automated process managers, applications discovery products, integrated visual workspaces, end-to-end business service impact assessment tools and enabling professional services that will reach the market in late 2005 through the middle of 2006.

What makes these announcements so important is that, collectively, they allow IBM to push customers and competitors to rethink their entire availability management strategies as part of architecting dynamic IT management solutions for composite applications and virtualized infrastructures.

This white paper begins by describing how availability management capabilities need to evolve to support service-oriented architecture (SOA) and virtualized architectures. It then discusses how IBM's availability strategy and new product/service introductions respond to these needs by challenging the traditional systems-oriented view of availability with a more services-centric perspective. It concludes by recommending that CIOs evaluate and deploy this new perspective on availability management as part of their long-term ITSM implementation program.

Section 1

Dynamic Computing Environments Push Traditional Availability Management Strategies to the Breaking Point

Availability management has traditionally focused on providing IT staff with information about the status and utilization of individual IT components and resources. As a monitoring and reporting function, availability management tools generally reported on individual system performance, uptime, utilization and mean-time-to-failure. IT staff used this information to detect emerging performance problems and to document compliance with performance and service level agreements (SLAs)—as well as business continuity commitments.

In parallel, service desk staff collected information about incidents and service-level violations and tracked service delivery metrics such as mean-time-to-repair and escalation intervals. They also generated problem management tracking reports and analyzed incident and problem management metrics such as numbers and types of trouble tickets, root causes frequencies, service levels and third-party vendor support contract compliance.

In the problem management, performance management and availability management domains, monitoring and reporting tools have historically focused on assessing the status and condition of very specific IT resources. Most were designed to inform IT staff, rather than to take action automatically. The processes connecting service desk trouble reports, system and application performance reports, availability status reports and decisive operational IT actions were often highly manual, ad hoc, time consuming and inconsistent.

In environments where mission-critical business applications are tightly associated with dedicated stacks of hardware and infrastructure, availability and performance can be easily associated with a specific set of resources. In this type of static environment it's fairly easy to assess the business impact of a problem with any resource in that dedicated stack. However, in dynamic environments using virtualization, grid computing and composite SOA-based applications, traditional reliance on disconnected, manual availability, performance and problem management reports and processes can result in unacceptable service level impacts.

Increasingly, CIOs are understanding that successful, large-scale roll-outs of SOA applications and virtualized infrastructures must be supported by significant changes in the way they manage IT as well (see Figure 1). The rising interest in IT service management and operational best practices, such as those described by ITIL, underscores the urgency of finding a new way to manage dynamic IT environments.

To keep up with the demands of dynamic, on demand environments, CIOs and their business partners need a new approach that integrates availability, performance and problem management processes and tools in a more collaborative and real-time way. Specifically, IT staff needs to be able to:

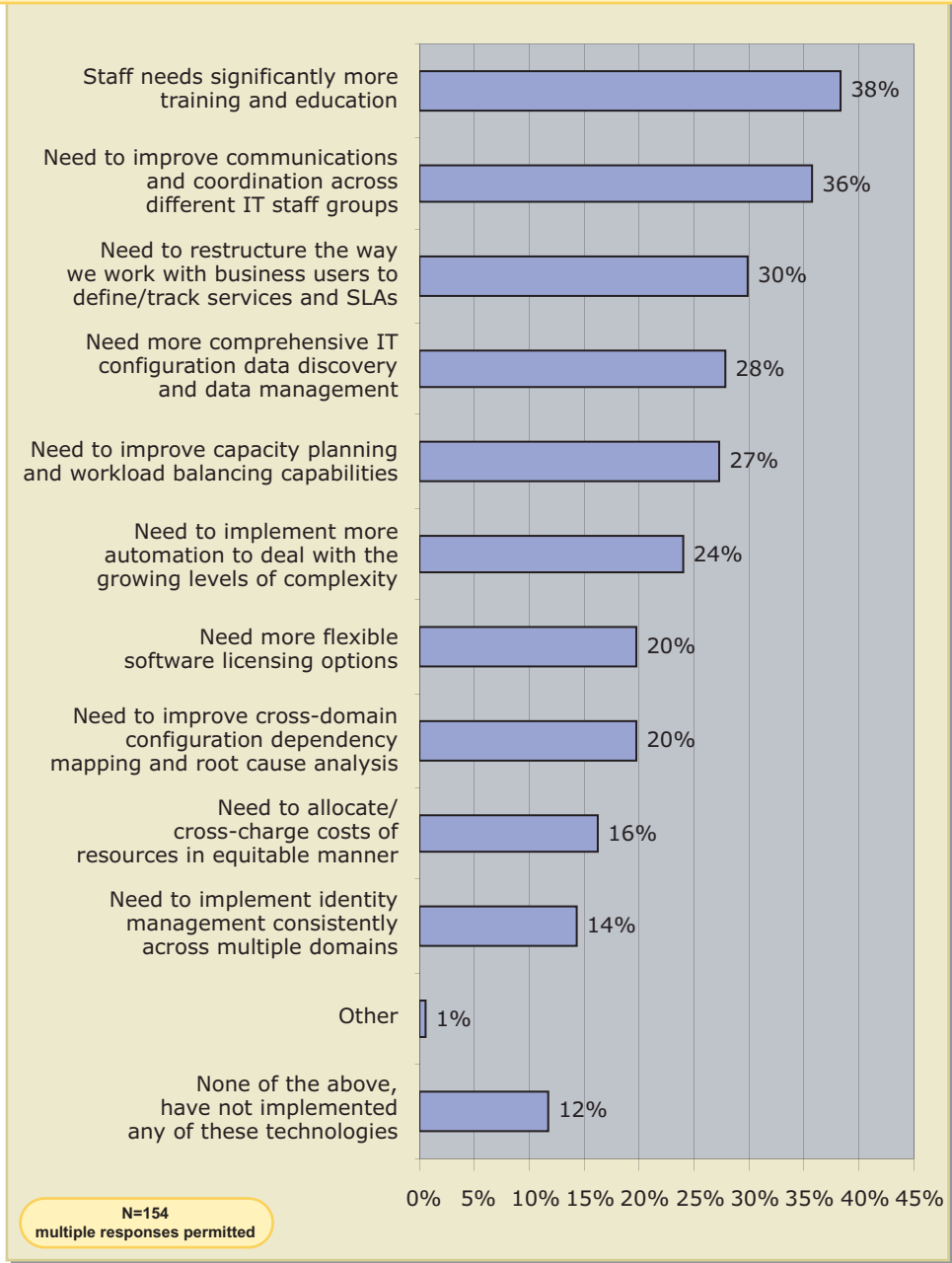
- Share accurate and timely availability and problem management information with all relevant IT staff (including development) simultaneously, regardless of their specific operational domains;
- Automate workflows and hand-offs across application and system-level incident detection, problem tracking, root cause analysis, availability monitoring, performance reporting, business continuity systems and service-level monitoring;
- Quickly assess end-to-end service availability and performance dependencies across all relevant systems and infrastructure tiers;

Figure 1

Virtualization, Web Services and SOA Management Challenges

Among enterprises that have implemented virtualization, Web services and/or SOA, key management challenges include the need for better staff training, communication and coordination, and better ways to track and report business service levels.

If your organization has implemented infrastructure virtualization and/or Web services/SOA strategies please identify the top three IT management challenges you experienced as a result.



Source: Summit Strategies, Inc., www.summitstrat.com

- Enable teams made up of experts from different domains to work together effectively, without having to resort to time consuming conference calls and meetings;
- Tie operational responses and policies directly to the end-to-end business service impact of the specific problem; and
- More proactively detect and remediate problems before they become service affecting, using automated policy-based procedures whenever possible.

Given that problem, availability and performance management activities have long relied on independent and fragmented tools and data as well as manually coordinated responses to keep IT up and running. The integration and automation of these functions is likely to challenge the status quo inside many IT organizations. Yet, rethinking the organization's day-to-day approach to these activities can significantly reduce costs and improve business performance by:

- Empowering IT to be more proactive in detecting and ameliorating problems before they actually impact business process performance;
- Allowing IT to set consistent cross-domain priorities based on a real-time understanding of business impacts;
- Enabling faster problem diagnosis and more coordinated response by providing IT staff, including development, with a better understanding of cross-tier dependencies and providing common access to accurate and timely information; and
- Improving communication between business sponsors and IT staff via the use of shared real-time reports and performance impact visualizations.

As with any IT service management initiative, the integration and automation of problem, availability and performance management programs requires a modular implementation plan, committed senior leadership and a state-of-the-art set of tools that leverage existing investments across the board.

Section 2 Integrated Availability Management Begins with Process Best Practices

To begin executing on this integrated availability management model, IT leaders need to provide their staff with a clear vision and roadmap. These must include a well-defined set of integrated process models and supporting tools that will allow domain experts to share information, work collaboratively and react much more quickly than they can today.

For most organizations, the most challenging aspect of integrating traditional fragmented processes comes from cultural challenges and difficulties related to getting started. Increasingly, best practices education and training programs such as ITIL training initiatives are used as a launch pad. These models do a

good job of describing how new, more integrated processes need to be structured, but do not generally specify how to implement them at the level of specific systems and applications. Often, IT staff needs to develop more detailed task-level workflows, operational procedures, policies and metrics before it can put the ITIL concepts into action.

Breaking incident management down into a number of discrete sub-processes illustrates the value of integrated problem, performance and availability management in a composite application environment. Incident management can be broadly defined as identifying, diagnosing and resolving service-impacting events and failures. In a traditional management environment, each component is monitored, managed and kept operational by its own set of operators and tools. The individual processes of incident identification, documentation, diagnosis, notification and resolution can be custom designed for each individual domain.

In most traditional environments, operators in one area are rarely notified about changes in another area and they generally have limited tools available to view the data collected by another operational domain. Each individual technology silo sets its own operational policies and priorities, trains its own operators and tracks its own SLAs.

By comparison, integrated availability management calls for incident and event tracking, reporting, diagnosis and resolution to be organized in terms of end-to-end services where different system resources are managed collaboratively and domain experts are able to work together using common data and standardized workflows to keep the end-to-end service up and running.

Vendors such as IBM are responding to this need by packaging pre-defined workflow and automation models as part of their management tools. These pre-defined models need to be consistent with standard best practices while bringing workflows, configuration, thresholds, responses, etc. down to very specific and actionable levels.

Section 3 Tools Investments Follow Integrated Process Priorities

With process models, handoffs and metrics defined, CIOs need to consider whether their staff has the tools to execute these best practices models. Although most organizations are likely to have a number of incident, service desk, availability monitoring and performance reporting tools in place, an integrated environment is likely to need some additional capabilities including:

- *Integrated, heterogeneous application and infrastructure discovery and analytics.* Information collected by various resource and domain-specific tools must be filtered, rationalized and presented in the context of end-to-end services and availability SLAs. Tools need to collect and organize data in such a way that it can be shared with those operators involved in availability management activities as well as in development and other IT areas such as capacity planning or configuration management.

- *Shared and role-based data views, metrics and dashboards.* Since individual experts continue to be responsible for the administration and management of their own domains, they need the ability to access data that is specific to their operational area in a format and context that meets their needs. Simultaneously, they need access to the broader end-to-end service availability and performance picture, including end-to-end SLAs, financial information and asset data. They also need to easily collaborate with other domain experts to quickly address complex situations that span multiple technology environments. Integrated consoles and sophisticated visualization tools can be very helpful in pulling together views provided by multiple underlying systems and in communicating them in ways that are most useful for different IT and business roles.
- *Easily customized best practices workflow models and templates.* As experts from multiple domains work together more closely than ever before, they need a standardized set of workflows and playbooks that span the entire IT lifecycle. Early adopters have often invested countless hours crafting these end-to-end workflows detailing which metric to monitor, which incidents drive which actions, in what order different tasks should take place, who has responsibility for each action, and who is authorized to execute, review and approve each task. Out-of-the-box templates and runbooks can significantly reduce the time it takes to get integrated availability management processes up and running, as long as they can be easily fine-tuned as needed.
- *Metrics-driven policy-based automation capabilities.* Initially, most organizations implementing integrated availability processes will want to retain manual approval and activation processes. However, as an organization develops service delivery profiles and widespread support for end-to-end service management approaches, it can use many of these policies to automate routine repeatable tasks. By deploying tools built in automation capabilities, managers pave the way for the day when the organization is ready to take this step.
- *Transparent integration with existing problem, availability and performance management processes and tools.* New availability management tools should be intuitive and easy to learn, make operators more efficient quickly and minimize disruption to service levels and day-to-day operations. They must also work with existing data collectors, command line interfaces and customized scripts that are important to the near-term productivity of existing IT staff.
- *Ability to align policies and integrate operations with other ITSM processes including change and configuration management, business continuity and compliance.* Keeping IT resources up and running requires more than problem and incident management execution and performance and availability monitoring and reporting. It also demands business continuity solutions, backup and recovery systems, change and configuration activities, and

compliance reporting capabilities. By aligning service levels and policies across all IT activities, IT staff can work more productively cause fewer human errors and deliver more consistent and cost effective services to business users.

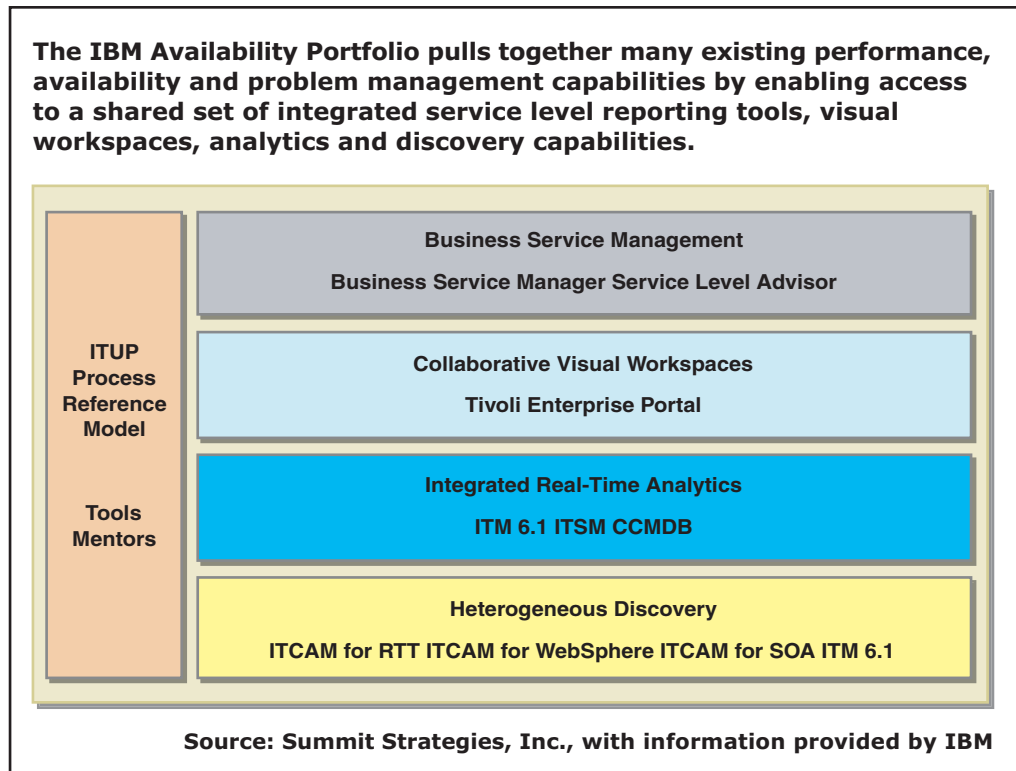
As with any new management software roll-out, companies need to modularly introduce integrated problem, availability and performance management tools, in a way that takes full advantage of the existing tools and staff skill sets. The next section describes how IBM's availability initiative aims to help CIOs implement this integrated vision incrementally at their own pace and on their own terms.

Section 4 IBM Availability Management Initiative Challenges the Status Quo

IBM's recently announced availability management initiative includes a closely related set of process models, tools and services designed to help CIOs better coordinate and integrate all aspects of dynamic, on demand infrastructure and application problem, availability and performance management.

The new IBM availability portfolio has been designed to promote cross-domain collaboration and seamless information sharing by adding several vital capabilities to the Tivoli Suite (see Figure 2).

Figure 2 Newest Members of the IBM Availability Portfolio Add Powerful Discovery, Visualization and Workflow Optimization Capabilities



- *Heterogeneous applications and infrastructure discovery.* The newly released IBM Tivoli Composite Application Manager (ITCAM) tools for WebSphere, SOA, and Real Time Transaction Responses enable the rapid discovery of incident, response time and service level alerts from many different applications environments. In addition, IBM has also introduced the Discovery Library, a powerful new discovery capability which is the first deployable component of the new Tivoli Change and Configuration Management Database (CCMDB). The Discovery Library provides an XML interface that can consolidate outputs from multiple discovery technology sources, including those of third-party vendors. This data can then be made available to many other management software applications and analytic tools.
- *Comprehensive, real time analytics.* The IBM Tivoli Monitoring 6.1 (ITM 6.1) upgrade eliminates the need for customized scripts to automate monitoring and historic performance data analysis. ITM 6.1 ships with a universal agent and a new data warehouse architecture that allows customer to collect, store and analyze both historic and current infrastructure management data more efficiently.
- *Collaborative, visual workspaces and reporting tools.* The IBM Tivoli Enterprise Portal (TEP) provides a common visual data presentation and collaborative workshop accessible by many different domain specific IT experts and management tools. TEP provides a much more sophisticated set of visualization capabilities than has previously been available as part of the Tivoli suite. It ships with the ITM 6.1 and ITCAM products and can also be deployed to support many other elements of the Tivoli portfolio as well.
- *Business service management dashboards.* The IBM Tivoli Business Systems Manager and IBM Tivoli Service Level Advisor products provide executive dashboard views of service performance, health and business priority while allowing different domain experts to drill more deeply when needed. The IBM Tivoli Business Systems Manager can access the Discovery Library by importing information about IT resources and relationships to rapidly create and maintain business systems definitions and data. The Tivoli Business Systems Manager dashboard is designed for use by both line-of-business owners and IT managers and can be customized accordingly. Customers are able to analyze both historic and current data to support in-depth trend analysis and visualization.
- *Policy-based automation.* The entire IBM Availability portfolio is design to allow policy-based automation driven by pre-set metrics and thresholds. IBM ships its own set of availability management best practices templates and runbooks with ITM 6.1 but also provides customers with tools to customize policies and task automation routines as needed.
- *Integration with existing management tools and other ITSM processes.* IBM has designed the availability management portfolio for incremental

implementation in a way that protects existing problem, performance and availability management investments. It has also designed the portfolio to perform as part of a broader ITSM environment. The IBM Tivoli Unified Process (ITUP) Reference Process Models and Tools Mentors for Availability Management are part of a broader set of ITSM process models and wizards being made available by IBM to assist customers in the implementation of ITSM strategies. Likewise, the availability management products will all comply with the ITSM CCMDB architecture as it becomes available in 2006.

IBM's commitment to ITSM and IT lifecycle management is reflect across the availability portfolio. With several new products expanding Tivoli's visibility into composite application environments and the addition of significant visual, collaborative workspaces, IBM offers customers both stand-alone products that can be deployed quickly and a roadmap for integration into a more comprehensive ITSM framework when the customer is ready.

Section 5 Checklist for Integrated Availability Management Success

Integrated problem, performance and availability management is a major mental and operational shift in the way IT staff executes their day-to-day jobs and document their contributions to the business. It requires cultural transformation, process modifications and tools upgrades to deliver on the promise of process-centric end-to-end IT service management. Key steps to consider in crafting an availability management strategy include:

Step 1: Leadership and cultural commitment.

CIOs and IT leaders need to recognize how much the horizontal integration of existing IT processes will impact the way their staff operates day-to-day. Organizations that do not currently have end-to-end availability process workflows need to define what the desired environment should look like and make sure that all domain experts—and their supervisors—are on board. Out-of-the-box templates can help jumpstart the process-design activities but senior level commitment and support is needed to keep things on track when human nature kicks in.

Step 2: Realistic modular rollouts.

Most mature IT organizations have invested in extensive IT monitoring and root cause analytics over the years. In many cases, in-house experts have developed customized scripts and are heavily committed to these as their first line analytic tools. Even the best third party tools may not mimic these customized resources exactly, resulting in frustration and resistance on the part of the operator being asked to give them

up. To overcome these concerns, many IT leaders deploy new tools on a modular, phased basis. Introducing them as part of new composite application roll-outs, major consolidation programs or in areas where existing tools are not doing the job helps to demonstrate the benefits of the tools early on.

Step 3: Share all data widely.

State-of-the art availability management tools will help IT integrate discovery, analytics, operations and reporting. This data will be used broadly in many different IT organizations and accessed by operators with many different roles and responsibilities. Keeping the entire organization in synch requires consistent, shared documentation of every aspect of the workflow, policies and best practices. Tools with solid reporting and visualization capabilities are needed to keep the entire team up to speed and on the same page.

Step 4: Monitor, analyze, then automate.

Stabilizing and improving existing problem, performance and availability management activities, such as incident monitoring and root cause analysis, needs to happen before organizations are comfortable with implementing policy-based task automation. The availability management plan should start by optimizing monitoring and analytic functions, and then use that information to define or improve policies, action thresholds and service level reporting strategies. Automation should only be added once both IT and the business users agree on the policies and SLAs.

Step 5: Extend integration to include related ITSM services.

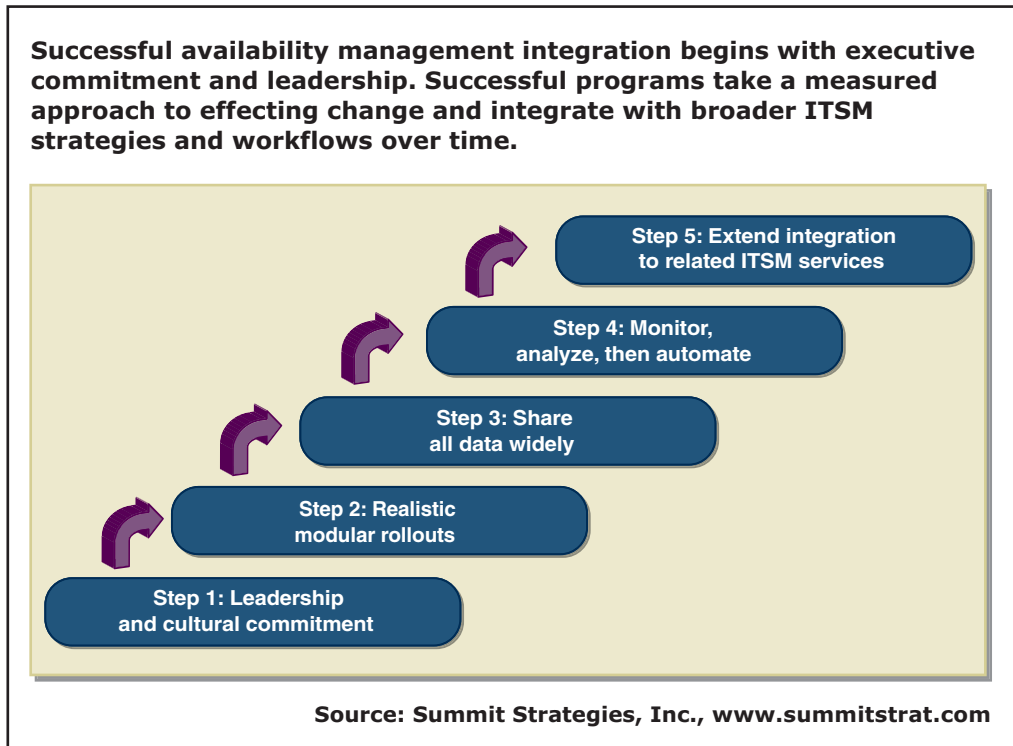
Integrated availability management is only part of a broader IT service management strategy. Service level assurance also depends on business continuity programs, change and configuration management, capacity planning, security and compliance initiatives. The selection of any management tool should depend not only on its ability to solve immediate tactical problems, but also on its ability to help the organization execute its ITSM vision over the long run.

Most organizations should expect to implement integrated availability management over a two to five year timeframe, depending on the scale and complexity of their existing environment. Organizations with aggressive commitments to composite applications may need to move more quickly to assure they are equipped to support these dynamic environments on an end-to-end basis.

IBM has done a good job packaging old and new Tivoli products into a broad-based collaborative package that should help customers operate more

Figure 3

Five Steps to Successful Availability Management Integration



effectively in dynamic, composite application environments. Whether your organization is ready for a full blown ITSM transformation or just wants to upgrade its ability to collect and share critical availability and performance information, the IBM availability portfolio deserves consideration.

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