

Putting the efficiency of end-to-end automation to work across the enterprise

From reducing IT workload to controlling IT impact on business, IBM helps lower costs and boost revenue



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Introduction

Automation. It's all about delivering efficiency, consistency—and the results you can derive from them. Automate IT system operations and you can improve productivity, reduce the IT staff workload, minimize the chance of human error, enhance the effectiveness of disaster recovery, and increase overall system and application availability. All of which can give you better control of IT's impact on business, speed response to technical and business problems, reduce staff and operational expense, and build bottom line profitability for your organization.

An effective systems automation approach not only provides visibility into the health of application and associated resources, it controls the various components of systems and applications, and it reacts to change to ensure ongoing IT and business operations.

An end-to-end systems automation approach reaches across the enterprise's distributed and mainframe environments alike with scalability that can accommodate even the largest infrastructures. It is broad in scope to manage ever-increasing IT complexity. And it is integrated to tie together low-level information coming from critical resources with high-level views and control of the enterprise. The whole is greater than the sum of its parts, allowing operational simplicity, efficiency and consistency.

IBM Systems Automation provides an efficient, easy-to-implement and easy-to-manage, policy-based approach based on proven IBM solutions. Enabling end-to-end automation of operations and applications throughout the full IT and business environment, IBM Systems Automation provides a unified, "single pane of glass" view and control of IT operations to support rapid response to alerts, problems and threats, as well as improved control over the impact of IT on the organization—helping reduce interruptions to ensure ongoing operations for critical business functions.

Automation helps answer complex and demanding business and IT needs

In today's global business environment, organizations must always be ready to do business. Customers, vendors and partners are everywhere, making continuous access to enterprise applications a necessity. In today's competitive business climate, organizations depend on instantly available data. Industries such as finance, manufacturing, transportation, engineering and retail need constant insight into performance and opportunities. On today's smarter planet, organizations need tools to understand and process the data they receive. Instrumented, interconnected and intelligent technologies provide information on an unprecedented scale.

As business and IT environments become more complex and demanding, automation will play a significant role in meeting these global, competitive and data-related needs—and in keeping businesses running efficiently and cost effectively. Today's scale of IT environments, demands of business processes and volumes of data make reliance on human-run operations excessively difficult and expensive—and increase the consequences of errors that too frequently result from human manual error. Any downtime can damage the organization's customer relations, brand value and bottom line profitability.

Automation is a key tool for addressing these broad issues of complexity, risk and cost. It can also help take control of the day-to-day management issues that arise from proliferating remote data centers; the increase in hybrid computing environments that incorporate both distributed and mainframe resources; the increasing move to cloud computing with its dynamic infrastructure, fluid architectures and heterogeneous platforms; and stagnant budgets that require existing staffs to shoulder the additional workload for supporting business growth and IT complexity.

A policy-based approach ensures automation simplicity and accuracy

As beneficial and necessary as systems automation can be, some organizations find it difficult to move away from their incumbent point solutions that automate specific functions—especially if they already have invested in custom scripting for their environments. Or they are reluctant to risk a move to solutions that may be new to their infrastructures.

But a policy-based approach, rather than one that requires additional new scripting, combined with technologies delivered through proven, industry-leading solutions from IBM, can overcome these technology challenges and reliability fears. The IBM end-to-end, policy-based solutions for systems automation provide a best-practices approach to cost-effective, high-availability service and application delivery.

The IBM approach to systems automation uses policies to define all the components needed to provide service. It then identifies the dependencies between components so that the impact of a problem with one resource can be shown in the context of related resources, enabling recovery actions that assure end-to-end functionality. The policy-based approach also provides integration up and down the application stack from systems monitors to alert managers in order to support accurate and rapid actions. And it reduces custom scripting, so changes require only a change to the policy—not a change to code. This reduces manual effort required to support, maintain and test automation.

The result is a consistent approach to managing IT resources and supporting business processes. Single components or entire systems or applications can be brought up or down with the click of a button. Changes in one resource can be automatically cascaded across the enterprise based on the policy definitions.

Efficient automation: Deployment in a hybrid environment

Increasingly, distributed and mainframe environments exist side by side. But the automation implemented for each usually has not taken into account the interdependence needed to provide end-to-end service. Mainframe environments, especially those based on IBM System z®, typically have deep automation capabilities that are blind to other platforms. But distributed environments are often still automated on a system-by-system basis—with some processes automated and others handled manually—and as a result can be minimally effective in today's complicated application architectures

An end-to-end, policy-based automation solution, however, can provide a consistent approach that extends efficiencies and savings already achieved on stable, mature platforms to the rapidly growing and more heterogeneous distributed side of the environment. With the ability to define similar applications using a common template, a policy-based approach can drive consistency, simplify operations and improve management throughout the hybrid environment. It can be of significant help to IT staff in improving productivity, lowering costs and increasing system availability. Beyond IT, cross-platform automation can support greater efficiency and consistency in the ways the organization conducts business. Policy automation also adapts quickly to rapidly changing service delivery such as cloud deployment.

Efficient automation: Across people, processes and functions

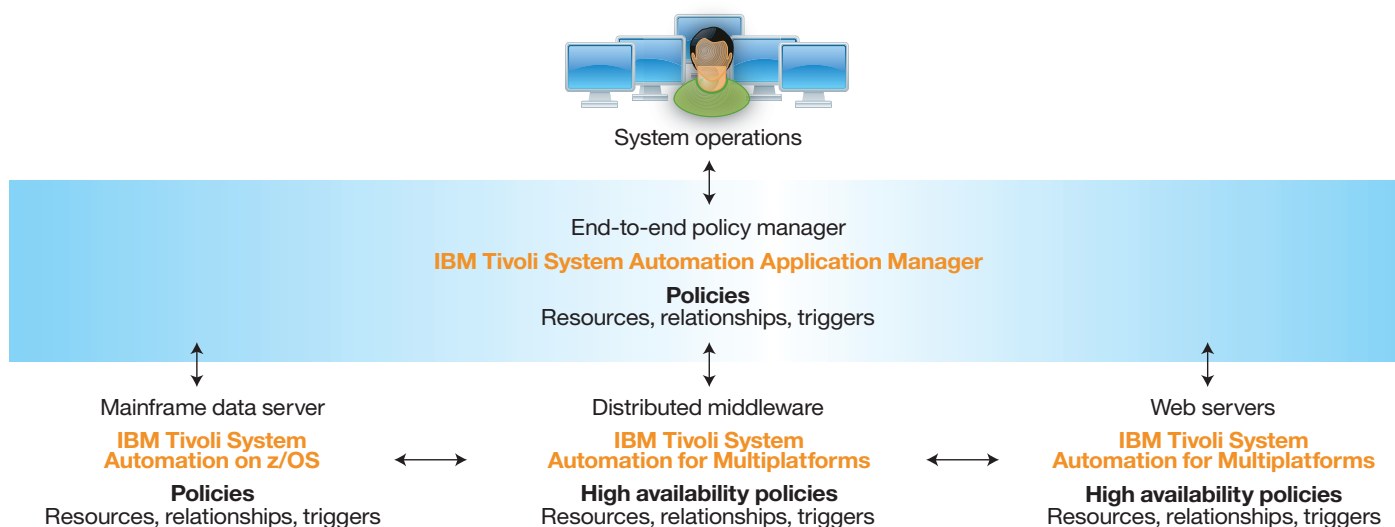
Question: Where does system automation fit into IT and business operations? Answer: It fits across the enterprise, enabling collaboration and simplifying tasks and processes for IT staff in multiple functions so they can more effectively support business.

IBM solutions can provide automation that begins with system monitoring and ends with complete system and workload automation—touching every step in between. IBM System Automation on z/OS®, IBM System Automation for Multiplatforms and IBM System Automation Application Manager work together to provide high availability and automated operations across the enterprise. IBM System Automation can provide a single interface for end-to-end management from the entire enterprise to a single component or an application.

System Automation works hand in hand with other tools to extend the sophistication and depth of IT management. IBM solutions such as IBM Tivoli® Composite Application Manager, the IBM Tivoli OMEGAMON® family of products and IBM Tivoli Application Dependency Discovery Manager relieve manual operations at the monitoring and management level. The OMEGAMON family and IBM Tivoli Asset Discovery for z/OS provide analysis, diagnosis and repair functions based on monitoring results. IBM Tivoli Business Service Manager and IBM Tivoli Netcool®/OMNIBUS solutions provide the ability to assess the business impact of IT operations.

Huge benefit lies in the fact that when functions are automated, individuals from operators to programmers, architects and developers no longer have to collect, examine and act on systems information—operations can be automated throughout the stack. Views and alerts can be as granular as the organization wants, completely automating processes or directing IT staff to take action. Together, these solutions can provide an end-to-end approach for small or large actions, from individual change and error management to intervention that fixes the failure of an entire subsystem.

System automation flow



Efficient automation: Scalability for any size or complexity

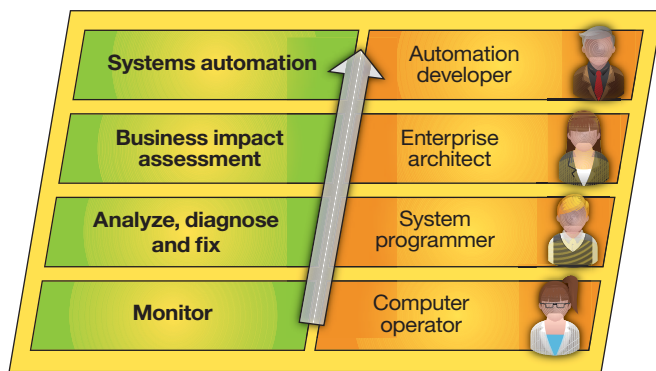
In a policy-based approach to systems automation, scalability addresses more than size. IBM applications are powerful enough to reach huge numbers of systems or applications across the enterprise. But more importantly—and in sharp contrast to competing point solutions that address only specific functions—IBM solutions also can tie resources and policies together to create an end-to-end automation approach. Scalability in addressing infrastructure complexity as well as in addressing its size covers not only the management of specific resources, but also related resources on multiple platforms.

This integrated approach can join systems into an automation unit that can both free IT from managing pieces at the individual resource level and ensure correct and consistent systems operation. Units can be created across a range of components

such as network connections, a part of an application or a web server. They can span platforms, connecting applications that run on both distributed front-end devices and the mainframe back-end.

For example, an IBM DB2® entity with multiple components that have to be brought up and made available in a particular sequence can be automated using policies for parent-child relationships to ensure the sequence always occurs correctly. Similarly, components can be taken down automatically. And of course, should any component fail, the policy will direct automated recovery to assure restoration of service. The process not only provides end-to-end operations for enterprise-wide functions, it provides them with a simple click, whether bringing up or taking down a complete application or any of its individual pieces.

Automation across IT operations



From infrastructure views to IT staff actions, automation is a key component of the overall infrastructure that can enhance IT operations.

Efficient automation: Ensuring continued operations

An important result of automation's increased consistency in the way IT functions are carried out, automation's ability to handle complexity in both equipment and processes, and automation's reduction in manual intervention and accompanying errors in IT management is continuous high availability of applications and middleware components. A single point of contact not only automates resource dependencies, including those running on heterogeneous platforms, it speeds problem resolution and helps reduce disruptions with a "single pane of glass" interface that provides clear views of applications and their relationship to other applications.

Systems automation can provide a focal point that acts upon alerts from monitoring tools, allows operators to drill down for more information and delivers the insights necessary to take actions that can ensure uninterrupted operations—regardless of the source of information in the enterprise-wide environment.

Automation ensures operations without hands-on attention

FIDUCIA IT AG, one of Germany's largest full-service IT providers for financial institutions, sought to improve availability in its mainframe environment with an automation solution that would reduce the risk of unplanned outages, simplify and secure operational controls, and eliminate the need for manual recovery and maintenance.

Deploying Tivoli System Automation for z/OS in its IBM System z10@-based mainframes, FIDUCIA was able to automate input/output, processor and systems operations so that the mainframe environment could run almost completely unattended.

The company now monitors for adherence to company-defined, desired states and launches appropriate responses based on those pre-defined policies. In the event of faults, outages or planned maintenance, applications can be moved automatically from one machine to another to ensure high availability.

Efficient automation: Understanding and limiting business impact

Just as systems automation can provide information on performance or failure that operators can use to keep the infrastructure running, it can also provide insights into the business impacts of IT that can help avoid increased cost or reductions in productivity and profitability.

Business service management software can use data gathered by monitoring and diagnostic software to improve the visibility, control and automation of complex IT architectures and to track problem status and assess the impact on the business. In such a business view, for example, multiple applications required for

product ordering can be considered together as a total solution to assess the impact of an error in one application on the usability of the others.

Similarly, with System z, including IBM zEnterprise™, hardware and software that support related capabilities can be grouped into workload resource groups—multiple applications, servers and storage devices supporting billing processes, for example—that can be then be automated to ensure continuous and reliable operations.

A business view enables IT to know the kind of impact an operation such as rebooting a server will have on the business application environment. Determining that a correction such as a reboot will interrupt more people and processes than the issue it is intended to fix can point the way to a less disruptive resolution or to automate workload scheduling of a resolution at a time when its impact won't be so great.

Efficient automation: Moving to the cloud and in new directions

Cloud environments typically are hybrid environments. It is not unusual for distributed systems to provide front-end, external-facing functions, with data residing on mainframes. As such, clouds can benefit significantly from the cross-platform operations that policy-based automation supports. But cloud environments are also rapidly changing. The numbers of users and their demands on systems can rise and fall dramatically, while the services a cloud provides also can change. The use of policies instead of scripting as the foundation for automation supports the flexibility and adaptability that rapidly changing clouds demand.

In much the same way, business growth by merger and acquisition creates a complex mix of technologies that is best handled with policy-based automation. Its unique policy structure allows common functions to be easily and consistently cloned to new

systems and applications while simultaneously providing scalability to absorb growth in the future. The common interface and unified view into systems management can span the combined environments with standards and efficiency while reducing the IT headache of learning multiple single-function tools.

IBM solutions make end-to-end automation a reality

The IBM Systems Automation portfolio delivers comprehensive solutions that enable an end-to-end approach to enterprise-wide, policy-based automation. IBM solutions are designed to work together seamlessly across distributed and System z environments with proven cost and productivity savings. Key IBM solutions to enabling systems automation include:

- [IBM Tivoli System Automation for z/OS](#): Providing a policy-based, high-availability solution designed to manage z/OS-based systems, applications and related hardware to maximize efficiency and availability
- [IBM Tivoli System Automation Application Manager](#): Extending application policy automation with coordination and management of application availability across cluster technologies to support better control of business services
- [IBM Tivoli System Automation for Multiplatforms](#): Ensuring continuous high availability by reducing frequency and duration of service disruptions for applications and middleware running on heterogeneous, distributed systems
- [IBM Tivoli Netcool/OMNibus](#): Consolidating complex IT operations management tasks with a central point of real-time service management for business applications, network devices, Internet protocols and security devices
- [IBM Tivoli Business Service Manager](#): Allowing business and operations teams to manage the complex relationships between services and the supporting technology infrastructure with real-time service visibility and health indicators, business context and impact to support response prioritization

Conclusion

A policy-based systems management approach can help any enterprise—whether its IT environment is distributed, main-frame or both—reduce business risk and manage costs, meet service level agreements and improve IT operations, and orchestrate recovery actions and ensure continuous operations. Automating cross-platform tasks across the enterprise supports business growth by reducing unplanned downtime, saves time and effort by eliminating the need for scripting, and simplifies management by consolidating tasks on a single console.

IBM Systems Automation provides efficient, easy-to-implement and easy-to-support policy management on proven IBM solutions. Enabling end-to-end automation of functions, IBM solutions support rapid response to alerts, problems and threats as well as improved control over the impact of IT on business operations.

For more information

To learn more about IBM solutions for systems automation, contact your IBM representative or IBM Business Partner, or download the IBM Data Sheet: [IBM Tivoli System Automation for z/OS](#).

About Tivoli software from IBM

Tivoli software from IBM helps organizations efficiently and effectively manage IT resources, tasks and processes to meet ever-shifting business requirements and deliver flexible and responsive IT service management, while helping to reduce costs. The Tivoli portfolio spans software for security, compliance, storage, performance, availability, configuration, operations and IT lifecycle management, and is backed by world-class IBM services, support and research.

Additionally, IBM Global Financing can help you acquire the IT solutions that your business needs in the most cost-effective and strategic way possible. We'll partner with credit-qualified clients to customize an IT financing solution to suit your business goals, enable effective cash management, and improve your total cost of ownership. IBM Global Financing is your smartest choice to fund critical IT investments and propel your business forward. For more information, visit: [ibm.com/financing](#)



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