

Orchestration and provisioning solutions  
To support your on demand business objectives



**Tivoli** software



**Dynamically align IT resources with business policies to improve the return on IT assets.**



### **Automate systems management processes to become an on demand enterprise.**

To become an on demand enterprise that is able to rapidly deliver new revenue-generating business initiatives and dynamically respond to market changes, a company needs to be agile. It must free valuable IT staff and assets from inefficient utilization and repetitive data center maintenance activities, and quickly redirect them to address market changes and new business opportunities. And it must do so while minimizing costs.

Today, companies meet demanding service-level agreements (SLAs) by overprovisioning IT resources. IT managers allocate resources with an assumption of worst-case peak demands for each individual application they support. This is called just-in-case provisioning, which is an extremely expensive and inefficient way to manage resources. It ties resources down rather than making them available for use on demand.

To stay competitive and agile in the global economy, companies must solve the problem of overallocating IT resources and transition into on demand organizations driven by business priorities and policies. They must do so to more quickly anticipate and respond to changing market dynamics, and to increase the return on their IT assets. An on demand business needs to meet and exceed its service-level requirements while keeping its costs down.

Companies can achieve these goals by automating their systems management processes to assign the right IT resources to the right applications at the right time, thereby increasing IT resource utilization and IT staff productivity. These systems management processes must leverage existing resources, and they must consistently apply the industry's and the company's best practices and policies across the enterprise.

Automation extends to efficiently managing security and patch installation, and tracking changes, enabling companies to execute successful rollbacks and decreasing the time needed to recover from failures. Consistent, automated systems management also enables on demand businesses to quickly install, configure and deploy IT resources, including new production servers. Overall, systems management automation helps companies become agile and efficient—able to dynamically respond to market demands.



### Orchestrate resources to maximize efficiency

To achieve performance and availability goals, reduce costs, and free resources for investment in business priorities, companies need to tap into underutilized processing power across the enterprise. An organization must economize its resource usage and allocate resources where the business needs them most, when it needs them most.

IT infrastructure orchestration enables efficient, timely allocation of resources, according to business priorities. Orchestration operates in three basic steps; it:

- *Senses how IT resources are performing on the basis of response times or utilization and compares this information against previously defined SLAs and business policies. Orchestration not only continually evaluates real-time IT resource status, it anticipates trends to better facilitate the provisioning of resources.*
- *Pools and allocates resources across the enterprise, and automatically assigns capacity where and when it's needed.*
- *Appropriately provisions resources as needed. Following best-practice IT service management workflows, orchestration automatically triggers actions to configure operating systems, middleware, applications, data and network devices across the infrastructure.*

*Orchestration is far more efficient and effective than permanently dedicating IT infrastructure to specific applications.*

Orchestration is a far more efficient and effective way to allocate resources than permanently dedicating IT infrastructure to specific applications. It reduces hardware and software costs because it enables companies to do more with existing resources. It reduces IT staff costs by intelligently automating repetitive tasks and avoids potential configuration errors that can result in production outages. Ultimately, orchestration aligns IT resources with business priorities.

### How orchestration works in one end-to-end environment

Consider a financial institution that has three key business applications:

- *A core banking application that must support demand peaks from the minute the branch opens each day until it closes*
- *A bank-teller application that must support demand peaks from midday through the afternoon rush hour, when most account holders arrive at branch locations to conduct personal banking*
- *An Internet-based, home-banking system that must support peaks after regular business hours*

A typical organization has dedicated IT resources for each of these different applications. Each of these applications is over-provisioned to meet its individual demand peaks and service levels, causing underutilization of resources at all other times.

Orchestration and provisioning enable the allocation of sufficient resources from a pool of resources to each of the three applications. By proactively sensing the environment and applying the unique business policies of the bank, orchestration continually allocates resources to the most important applications at any point in time.

By using orchestration, overall server utilization increases, demand peaks are met and the organization requires fewer IT resources.





### *Orchestration:*

Orchestration leverages input about the IT environment to make real-time decisions about where and when IT resources need to be allocated to support business priorities and maintain service levels.

### *Provisioning:*

Provisioning is the automation of data center processes, captured as IT service management workflows, which dynamically allocate and configure server capacity, software and network resources.

### *IT service management workflows:*

IT service management workflows are best-practice processes and procedures used to make IT infrastructure changes.



### **IBM delivers a superior orchestration solution**

The orchestration solution from IBM allows a company to allocate IT resources in concert with business goals and policies that the company defines. With IBM, companies can move from just-in-case provisioning to on demand provisioning. IBM Tivoli® software first senses, models and predictively anticipates changes in demand for IT resources. It then automates and coordinates the provisioning of servers, operating systems, middleware, applications, and network devices such as fire-walls, routers, switches and load balancers.

By automating the decision making about where and when to allocate resources, as well as the provisioning and configuration of those resources, the Tivoli orchestration solution reduces costs, improves resource utilization and server-to-administrator ratios, and helps companies meet their service-level objectives. Tivoli orchestration and provisioning software automates three systems-management processes:

- **Sensing**—monitors, models and predicts how much computing power applications require to meet service-level objectives
- **Locating**—finds available resources within the IT infrastructure from defined server pools or from lower-priority applications; then allocates (reallocates) these resources to priority applications, as dictated by business priorities
- **Responding**—configures and reconfigures servers, software, network devices and clusters to transfer resources from resource pools into application environments

*“IBM Tivoli Intelligent ThinkDynamic™ Orchestrator raises provisioning in the enterprise to a new level. It intelligently drives technology provisioning to dynamically meet the immediate needs of the business, which is significantly different than the technology-focused approaches that have been used to date. Service delivery will be much more effective, efficient and closely aligned with the company’s business objectives.”*

**Rick Sturm, President, Enterprise Management Associates, October 2003**

Tivoli orchestration software helps deliver optimal service levels by accelerating response time and delivering the right resources where a company needs them, when it needs them, according to business priorities.

### **Achieve orchestration without disrupting or overhauling existing systems**

Companies can use Tivoli orchestration software in their existing, heterogeneous environments. The software integrates with existing hardware, software and network devices without rewiring, minimizing implementation time and disruption, and delivering a faster return on investment (ROI). Tivoli orchestration software can manage most industry-leading platforms, load balancers, switches, routers, firewalls and more.

The Tivoli orchestration solution is unobtrusive in existing environments, is affordable to implement and improves the ROI of current IT resources.

### **Reduce costs, improve service levels and increase business agility**

The benefits that Tivoli orchestration software can provide a company are substantial:

- *Reduce the total cost of ownership, lowering the cost of hardware, software, people and facilities by improving utilization and return on assets*
- *Improve service levels during peak demand and reduce human error by automating provisioning*
- *Increase agility and enable faster response to changing business needs by sensing and responding to market dynamics, enabling customers to create new environments in hours (instead of days or weeks)*
- *Better align business goals and IT resources through intelligent, policy-based IT resource allocation*
- *Accelerate return on corporate acquisitions and on new revenue-generating initiatives by deploying them rapidly, consistently and without error*
- *Quickly assimilate new IT resources and provision as needed to support highest-priority applications*
- *Free up valuable IT staff to focus on strategic projects by automating best practices for manual, repetitive tasks*
- *Improve server build consistency, improving agility while reducing human errors through automation*

### **Leverage best practices to improve productivity**

Tivoli orchestration and provisioning software achieves automation through IT service management workflows that capture the best practices of IBM, independent software vendors (ISVs) and the company for each process or procedure. The software then utilizes these workflows when it automatically provisions IT resources. IT service management workflows are aligned with business policies so that automated orchestration supports business priorities.



The software includes packaged intelligence—an industry-leading number of prebuilt workflows based on IBM's extensive experience working with customers and solution providers. Tivoli orchestration software includes open-standards-based workflows that reach across a variety of operating systems, applications, network devices, middleware and protocols—including Java™, SNMP, XML, SOAP, IBM AIX®, Microsoft® Windows®, Red Hat Linux, Citrix, Cisco, IBM WebSphere®, WebLogic and many more. Also, ISVs have additional workflows to support their industry-leading applications.

A company can incorporate intelligence and best practices gathered from its IT staff into the Tivoli solution, which then uses this information to automate manual repetitive tasks. IT staff can easily create and manage workflows.

With IT service management workflows, IT staff can rapidly control, configure and automate the provisioning of IT resources, achieving consistent, predictable and error-free results. With Tivoli orchestration and provisioning software, building or customizing standardized infrastructure configurations takes minutes instead of days.





*“The new Tivoli Orchestration products are important proof points that IBM is serious about providing customers a full spectrum of choices when it comes to implementing On Demand.”*

**Mary Johnston Turner, Summit Strategies, “Tivoli Takes the Lead in IBM’s Drive for Broad-Based On-Demand Adoption,” October 2003**

**Multiple operation modes allow an evolutionary approach to automation**

A superior orchestration solution allows a company to adopt the technology at its own pace—automating systems management processes where the company wants, allowing it to retain manual control in specified areas and enabling the company to evolve toward dynamic automation.

Tivoli orchestration software offers multiple modes of operation for the execution of resource deployments:

- **Manual**—user-initiated and user-authorized
- **Semiautomatic**—orchestrator-initiated and user-authorized
- **Automatic**—orchestrator-initiated and orchestrator-authorized

These modes of operation can be applied globally over an entire infrastructure or can be specified by application or server farm in a granular manner. Tivoli software lets a company rapidly initiate orchestration in a small portion of its IT infrastructure and then incrementally expand toward the automation and orchestration of its entire IT environment.

**Automate patch deployment and minimize system vulnerability**

Today, the task of identifying vulnerable servers and applying patches has become overwhelming for most enterprises.

According to META Group analyst Mark Vanston, “The initial tasks, depending on configuration, can take an average of approximately four hours per patch per server. Although economies of scale do occur (for example, once tested and configured correctly, time to deploy decreases exponentially over multiple instances), the costs in terms of hours when utilizing a manual approach can be staggering.”\* The Tivoli solution automates the patch implementation management process, also eliminating the low-quality results of using several nonintegrated tools to deploy and apply patches.

**Provision applications consistently, correctly and rapidly**

Tivoli orchestration and provisioning software gives system administrators a systematic way to install, configure and remove packaged software across heterogeneous servers, and across many different geographic locations. Tivoli software helps a company capture its IT staff’s best practices and reapplies them consistently across its IT environment.

The software reduces the time IT staff spends installing and configuring packaged software—database servers, e-mail servers, Web servers, application servers, directory servers and other software infrastructure. Across multiple branches and hundreds or thousands of servers, the time saved can be enormous. Moreover, the Tivoli solution enables a company to

consistently configure software correctly the first time, avoiding weeks of troubleshooting, application instability and downtime.

**Automate code deployment and facilitate rollback when necessary**

Tivoli orchestration software reduces the risk of downtime or poor performance when deploying new code or content. The software automates the deployment of code, content and configuration changes within an IT environment. If necessary, the Tivoli solution can also be configured to roll back changes and return IT resources to an earlier, stable state. By storing and utilizing operational best practices, Tivoli software helps companies deliver a consistently higher level of quality when compared with the results of using manual methods or ad hoc scripts.

**Automatically execute management tasks across server groups**

Tivoli orchestration software allows IT staff to simultaneously perform routine system-maintenance and application-troubleshooting tasks across a set of managed servers. This function eliminates the need to log into a server, execute a custom script, view the output, take any necessary follow-up actions and repeat the process for each individual server. The software leverages stored knowledge about a company's environment to help IT staff apply the right workflows to the right servers. Workflow execution across groups of servers greatly improves IT productivity; eliminates manual, time-consuming tasks; and enables workflows to be executed consistently across the infrastructure.

**Quickly deploy and update operating systems**

Operating-system provisioning is the bedrock on which stable, high-performing, cost-effective applications are built. Tivoli software automates manual, time-consuming and error-prone provisioning. The software gives IT staff the ability to provision and re-provision systems consistently, quickly and cost-effectively. The result is consistent, secure and flexible server baselines, and a solid foundation for business applications.

**Automate and accelerate the recovery of system failures**

The Tivoli software solution enables companies to rapidly perform two of the most time-consuming tasks related to resource failure: the solution identifies the failing resource; then it automatically finds, reprovisions and adds the correct substituting resource to the cluster. In this way, the software reduces the time and money a company spends on fault management while complying with SLAs.

**Implement an orchestration solution that deploys quickly and delivers long-term value**

Tivoli orchestration software enables a company to rapidly implement orchestration in a small portion of its IT infrastructure and then, at its own pace, incrementally expand orchestration over its entire IT infrastructure. This software also captures and automates the best-practices knowledge of IT staff to reduce deployment time and increase deployment efficiency. The result is an affordable, scalable solution that can help a company manage increases in service-level requirements and reduce recovery time from failures, with a minimum investment.

Furthermore, the Tivoli solution gets companies started on their on demand journeys with orchestration and provisioning, and is able to evolve with changing business needs. Coordination across IT resources helps ensure a unified drive toward business goals. And IBM will continue to be at the forefront, providing companies with superior on demand solutions.





### For more information

To learn more about Tivoli orchestration and provisioning software and integrated solutions from IBM, contact your IBM sales representative or visit:

[ibm.com/tivoli/products/intell-orch/](http://ibm.com/tivoli/products/intell-orch/)

[ibm.com/tivoli/products/prov-mgr/](http://ibm.com/tivoli/products/prov-mgr/)

### Tivoli software from IBM

An integral part of the comprehensive IBM e-business infrastructure solution, Tivoli technology management software helps traditional enterprises, emerging e-businesses and Internet businesses worldwide maximize their existing and future technology investments. Backed by world-class IBM services, support and research, Tivoli software provides a seamlessly integrated and flexible e-business infrastructure management solution that uses robust security to connect employees, business partners and customers.

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\* Mark Vanston, META Group, January 2004.