Tivoli® software

A new paradigm for performance and availability

***Simplify the management of your e-business environment
with the advanced Tivoli Performance & Availability solution.***

Effectively managing IT resources is no longer simply a back-office or data center concern. For many companies, the e-business infrastructure has become a vital part of the business—enhancing employee productivity, offering customer-facing applications and driving new efficiencies on the production floor and in operating departments.

Because the e-business infrastructure touches so many elements of the enterprise, it's become essential that companies be able to manage performance and availability across the entire complex network of IT resources and components.

Traditionally, IT administrators have relied largely on the experience of skilled personnel to evaluate operating data and make decisions about load balancing, performance tuning and problem resolution. However, with the complexities of today's e-business environments, new strategies are required to achieve maximum performance—strategies that make it possible for e-business environments to become self-healing and self-adjusting. This need is particularly acute given the other challenges IT managers face today, including high staff turnover rates and reduced budgets available for investing in new resources.

Tivoli® software from IBM works to provide a solution with a powerful new level of intelligence built in for managing performance and availability.

The Tivoli model is wide-ranging, understanding various e-business components and their relationship to one another—not only host and distributed systems but also Web components. It is open and scalable, helping leverage existing investments going forward. Most significantly, the Tivoli model offers tight integration across three distinct layers of management capabilities:

- *Monitoring systems and applications*
- *Event correlation and automation*
- *Business impact management*

The Tivoli Performance & Availability solution is designed to provide out-of-the-box functionality, with the built-in expertise to manage a broad range of widely used applications. However, the value it delivers goes far beyond incorporating industry best practices for rapid deployment, ease of installation and ease of use. Because the Tivoli solution combines an exceptional level of intelligence with tight integration across the layers of performance and availability management capabilities, it makes it possible for IT departments to proactively manage systems for increased performance and availability.

Business impact management
Manage for business success
Proactive management of service levels
Cross-domain historical analysis

**Event correlation
and automation**
Understand cross-domain interdependencies
Identify root cause and automate cure
Eliminate potential points of failure

**Monitoring systems
and applications**
Autodiscovery of critical resources
Automated problem resolution
Response-time analysis

*The Tivoli Performance & Availability solution offers tight
integration across three distinct layers of management.*

Use proactive systems management to help enhance your e-business ROI.

What is "proactive" systems management? It means having the technology and the intelligence in place—within the software products themselves—to help prevent problems before they occur, to automatically correct problems before the symptoms become visible to your users and to be able to prioritize problem resolution in the context of your business priorities. These capabilities are the true drivers of return on investment (ROI).

Enhanced business processes

Business processes are your daily tasks—the to-do list your IT staff has in

organizational effectiveness. The Tivoli Performance & Availability solution can help you automate, simplify, combine and manage your business processes to reduce the expense, time and resources needed to run your IT environment and serve your customers.

With the Tivoli Performance & Availability solution you can proactively manage availability across the stack of your IT resources. This can help you take a giant step toward avoiding downtime and reducing the resources you currently have to devote to problem resolution and root-cause analysis.

each new Tivoli solution you implement can integrate with those already installed.

Tivoli software is designed to provide built-in intelligence which can help you predict business impact and optimize resource use—before problems surface. Equally important, Tivoli software can help you deliver this powerful set of management capabilities without bogging down system resources or decreasing the service levels you provide to your end users.

Even when the unexpected occurs, Tivoli solutions offer built-in intelligence that

place to help perform specific functions in your environment, such as backing up files or updating the inventory list of desktop machines. Without business processes your IT environment would be in chaos. When business processes are in place and used efficiently, you can improve the flow of operations, bring order and stability to your IT workflow and enhance productivity.

Tivoli software works directly with your business processes to help improve

The new-generation Performance & Availability solution from Tivoli software is designed to incorporate innovations that embed intelligent automation at key points throughout your infrastructure. In addition, because it shares a common architecture, the Tivoli solution provides a robust path forward for true end-to-end systems management, creating the opportunity to realize an exceptional ROI in your environment. Even if you start with just an entry-level monitoring solution that manages several key applications,

can help you quickly discern the root cause of a problem and begin moving toward a resolution. In addition, Tivoli solutions provide a full toolset to help your organization learn from its own operating experience.

Monitoring systems and applications

IBM® Tivoli Monitoring solutions incorporate industry best practices, including a set of metrics and thresholds, to provide outstanding value right out of the box. Functional enhancements

include integrated tools to simplify installation and deployment, such as an autodiscovery process and ongoing assessment capabilities that can automatically determine what needs monitoring in your environment and then recommend appropriate monitoring thresholds. In addition, intelligent agents are used to discover the Tivoli systems management products currently in use and integrate them into the Tivoli systems management infrastructure.

Tivoli Monitoring products also incorporate a firewall-friendly architecture that helps enhance the security of your e-business environment. Specifically, Tivoli products use a secure, proprietary method to send messages between monitored endpoints and the management console. This approach helps avoid the potential for security breaches that may occur when SNMP traps are used as the primary method for communicating across the environment.

Beyond functional enhancements, Tivoli Monitoring products also incorporate a deep level of knowledge about both the application under management and the environment in which it is deployed. This built-in intelligence can help you manage resources efficiently through innovations, such as Composite Generated Actions.

Using Composite Generated Actions, the Tivoli Monitoring product can capture a number of key metrics which,

when considered in combination (or as a composite), should trigger a specific management action. The metrics vary from application to application, but the impact of Composite Generated Actions can be powerful. It lets you manage more of your system resources proactively. In fact, in many cases the fixes can occur automatically—often before problems become evident to your end users.

Tivoli Composite Generated Actions don't replace event correlation. Rather, they take the concept to a new level of performance and impact. Traditional event correlation is designed to provide early notification at the enterprise level, across multiple resources. In contrast, Tivoli Composite Generated Actions work at the level of individual applications and resources. A lightweight, intelligent agent is deployed on a server, where it monitors a range of metrics generated by the operating system, middleware and other layers of the environment. When certain "composite" conditions occur, the Tivoli agent springs into action. In many cases the agent can correct problems automatically; otherwise, the event messages sent by the agent to the centralized management console identify recommended fixes. The Tivoli agent provides a range of system-aware options, not a barrage of data or symptoms that operators must wade through to find the real issue.

For example, if you have a server somewhere in your enterprise resource

planning (ERP) chain that's about to run out of memory, the Tivoli monitor for the server doesn't just send out an alarm. It acts intelligently to revise the memory allocation parameters at the operating system level. This action helps prevent the server from shutting down and causing a ripple effect throughout the ERP chain.
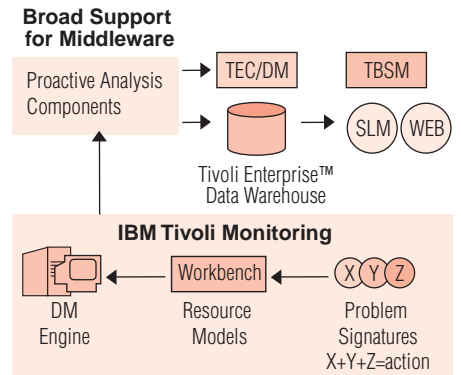
Along with self-healing capabilities, the Tivoli Monitoring product range offers exceptional breadth, with intelligent solutions known as Proactive Analysis Components for the major elements of your e-business environment. Based on extensive research conducted by IBM in conjunction with leading independent software vendors, system integrators and customers, Tivoli Proactive Analysis Components add a new level of system and application awareness to your management capabilities. Each Proactive Analysis Component comprises a set of Composite Generated Actions that continually evaluate key metrics for a particular application or piece of middleware. When potential problems arise, the Proactive Analysis Component can either notify administrators or take corrective measures automatically.

The IBM Tivoli Monitoring product provides Proactive Analysis Components for operating systems and systems hardware. Other Proactive Analysis Components are packaged in IBM Tivoli Monitoring for Web Infrastructure, IBM Tivoli Monitoring for Databases, IBM Tivoli Monitoring for Applications, IBM

The intelligence and automation in Proactive Analysis Components simplify the management of your e-business environment.

Tivoli Monitoring for Messaging and Collaboration, IBM Tivoli Monitoring for Business Integration and IBM Tivoli Monitoring for Security and Edge Services, providing advanced support for a wide variety of third-party applications and middleware.

- IBM Tivoli Monitoring for Applications—*Management for leading ERP and customer relationship management applications, such as SAP and Siebel. The SAP analysis components integrate with CCMS events, giving you the ability to monitor jobs, processes, files and other metrics vital to SAP R/3 operations. The Siebel Proactive Analysis Components monitor the Application Server, Gateway Name Server and Connection Broker and proactively manage numerous processes, such as the number of active tasks within each server instance.*

- IBM Tivoli Monitoring for Web Infrastructure—*Management for Web servers, such as Apache and iPlanet, and for Web application servers, such as IBM WebSphere® and BEA. These Proactive Analysis Components capture detailed status and performance metrics from the most commonly used Web infrastructure products. The Proactive Analysis Components can then transform this data into useful information by applying intelligence and delivering the enhanced information to system administrators through the intuitive graphical user interface.*

- IBM Tivoli Monitoring for Business Integration—*Management for enterprise application integration tools, such as WebSphere MQSeries® Integrator, and for messaging products, such as MQSeries. From a common central console, this Proactive Analysis Component can automatically discover key objects across the network and distribute preconfigured monitors to those objects. The comprehensive out-of-band monitoring collection helps ensure high availability and performance of all resources and applications that rely on message-oriented middleware.*

- IBM Tivoli Monitoring for Database Management—*Management for leading databases, including DB2®, Oracle and more. These Proactive Analysis Components help reduce or avoid the need for database administrators to spend time or energy determining what to monitor, when to monitor, and how to interpret and act on the monitored results. This leaves more time for the DBA to focus on more complex and less repetitive tasks.*

- IBM Tivoli Monitoring for Messaging and Collaboration—*As part of an integrated e-business infrastructure management solution, this Proactive Analysis Component provides the monitoring tools to help improve performance, availability and administration of Microsoft® Exchange, Lotus® Domino™, Lotus Sametime and Lotus QuickPlace servers. Vital infrastructure components—such as replication, mail transfer*

Broad Support for Middleware

Monitoring engine supports Proactive Analysis Components

Tivoli Monitoring for databases, applications, messaging and collaboration, business integration, Web infrastructure, content and personalization, and security and edge services.

agents and log files—are monitored and combined with critical operating system statistics to provide highly detailed Composite Generated Actions or problem signatures.

- IBM Tivoli Monitoring for Security and Edge Services—*Management for firewalls, load balancers, directories and other tools that provide security or edge services. This Proactive Analysis Component helps you provide quick, reliable and secure data transmissions for internal and external transactions. It helps you extend and validate user roles and security policy across departments, organizations or the entire enterprise.*

Tivoli distributed monitoring solutions are designed to extend the reach of your management outside the firewall. They provide visibility into the "demilitarized zone" where most e-business platforms reside, but without compromising the security of your e-business environment.

Tivoli Monitoring products are complemented by the Tivoli Monitoring for Transaction Performance product, which is designed to help maintain the performance and availability of your e-business and enterprise transaction systems. The Tivoli solution provides a reflection of your end users' experience, with innovative technology that can automatically measure actual customer response times, execute prerecorded transactions at regular intervals and scan your Web site for potential problems. This helps identify availability issues quickly, so that you can take corrective action—often before your customers notice any problem.

Advanced technology is used to trace user transactions, breaking down the total response time into its component parts so that you can see the path the transaction took through your infrastructure. A realtime Web-based interface provides a view of the response times your customers are experiencing. In addition, the Tivoli solution provides historical reports to help simplify long-term trend analysis. Tivoli Monitoring for Transaction Performance measures your end-user availability and response times for service level agreement validation.

Event correlation and automation
The commitment to helping enhance your performance ROI extends to Tivoli flagship solutions for event correlation and automation, too. These powerful products are designed to help enable and simplify a broad range of event reporting and correlation tasks across

the backbone of your IT environment, including distributed computing, local area networks (LANs) and host systems. But the Tivoli solutions don't just sound alarms: They also have the built-in intelligence to take corrective action automatically for many common problems.

The versatile Tivoli solution provides the tools you need to manage across boundaries as your once-independent IT systems and network operations continue to converge. Leading the way is Tivoli Enterprise Console®, a solution designed to provide a centralized point of control for events happening across complex distributed environments. It gives you the ability to process and respond to the thousands of events and alarms that occur daily from a variety of network devices, hardware systems and customer applications. These capabilities have been expanded to offer greater event handling capacity.

Beyond handling increased volume, Tivoli Enterprise Console can correlate system events with network events to help increase the scope and value of root-cause determination. More management tasks have been automated, giving you the ability to take corrective action in many cases without human intervention.

This expanded functional performance comes with a corresponding enhancement of out-of-the-box value. A new set of Intelligence Packs has been developed for Tivoli Enterprise Console.

These Intelligence Packs provide a deep level of business knowledge based on a range of identified IT architectural patterns. With Intelligence Packs installed, you may quickly realize benefits from a predefined set of rules and reactions that fit the way your business operates. You can also use the Intelligence Packs to extend the impact of Tivoli solutions deployed at other management levels. For example, they can be used to coordinate filtering and correlation tasks with Tivoli monitoring solutions in a tightly integrated way.

Tivoli software also offers a new level of integration between Tivoli Enterprise Console and Tivoli NetView®. This makes it possible to manage both system and network events in a unified way, on a single management console. By using the Tivoli Integration Pack for NetView, events can flow between Tivoli systems management applications and Tivoli NetView. This helps simplify the process of root-cause determination, giving you the views and intelligence which can enable you to resolve a problem quickly.

Tivoli software addresses other emerging challenges in network management as well. For example, as more and more enterprise customers integrate Web-based architectures with system network architecture, Tivoli software includes intelligent tools that let you manage both architectures from the host.

Tivoli NetView helps drive value in your environment by automatically discovering TCP/IP networks and displaying network

***Tivoli core products for event correlation and automation
deliver enhanced scalability, functionality and time-to-value.***

topologies in a graphical view that's simple to understand and manage. The tool can handle many critical tasks, such as correlating and managing events and SNMP traps, monitoring the overall health of the network and gathering network performance data.

When a problem occurs in a managed network, Tivoli NetView helps quickly identify the root causes. For example, its router fault isolation capability quickly zeroes in on the faulty router, displaying critical information about the problem and affected devices while suppressing unnecessary evaluation of affected devices.

To understand the potential value of the Tivoli integrated approach to systems and network management, consider the following scenario:

A network link goes down because of a router or port failure, isolating a server. In a typical event management environment, the management console would immediately report an inability to communicate with the server.

The next step, in many cases, would be to launch a series of corrective actions designed to bring the server back online: A trouble ticket is opened, and a technician is dispatched to troubleshoot the hardware. But because the trouble is actually in the network, this response extends the outage, wasting the time required for the server technician to determine that the isolated server is in fact operational.

Meanwhile, on the network management console, the failed router is reported accurately. But because the console is unable to determine the impact of this event on your infrastructure—namely, that a key server has been isolated—a network technician is dispatched on a low-priority basis to replace the router.

In the Tivoli management environment, it's possible to reduce or avoid much of this wasted time and effort by managing your systems and networks in an integrated way. Events from both sides can be correlated, helping you determine not only the root cause of the outage but also its impact on your e-business infrastructure. As a result, you can gain the information you need to help clear the trouble the first time by dispatching the right technicians to do the job.

That's how the tight integration between Tivoli systems and network management products pays off for you. They work together to deliver precisely the information you need to help resolve problems before they have a chance to affect your business.
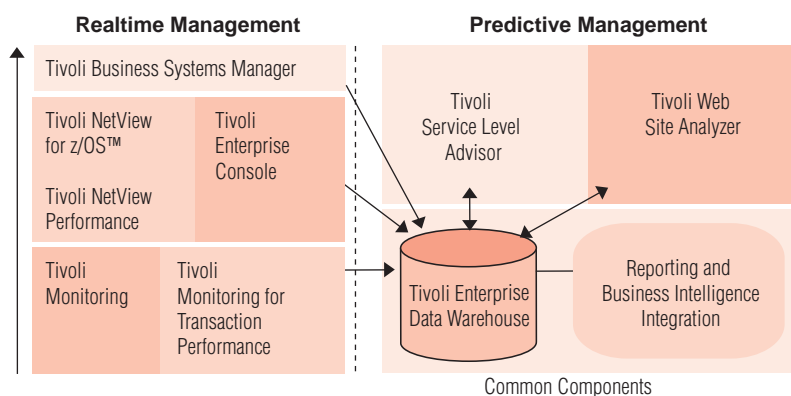
Business impact management
As e-business resources have taken on a greater role in driving the success of your enterprise, your current systems management products might not be capable of providing the information needed to manage proactively across your environment. Instead, they might be focused on helping you reactively manage daily operations. Although important, that functionality doesn't

provide the insight or intelligence you need to align the management of your IT resources with the broader business objectives of your enterprise. Nor does it provide the opportunity to turn raw operating data into information that can be used to help extend your success in the marketplace.

Tivoli software addresses these needs today with a new-generation performance and availability solution specifically designed to give you the ability to manage your IT environment for maximum business impact. The Tivoli solution helps enable you to measure and manage to committed service levels from one central control point across Web, client/server and host e-business environments. Importantly, the solution is designed to allow you to leverage your existing investment in systems management products, whether from Tivoli software or other vendors. In the process, it can help you solve some of the most demanding strategic challenges you face today, such as the ability to:

- *Predict and correct trends before they affect service levels*
- *Turn operating data into proactive business-planning information*
- *Demonstrate the value that IT can provide to your line-of-business (LOB) clients*

Tivoli business impact management products can help drive value for your enterprise by providing new functionality and intelligence in two key areas: realtime management, and predictive management using advanced

Realtime Management

Tivoli Business Systems Manager

Tivoli NetView for z/OS™

Tivoli Enterprise Console

Tivoli NetView Performance

Tivoli Monitoring

Tivoli Monitoring for Transaction Performance

Predictive Management

Tivoli Service Level Advisor

Tivoli Web Site Analyzer

Tivoli Enterprise Data Warehouse

Reporting and Business Intelligence Integration

Common Components

Tivoli Enterprise Data Warehouse is an open repository for consolidating management information to help improve your predictive management capabilities.

analysis techniques and leveraging the Tivoli Enterprise Data Warehouse.

The cornerstone of the Tivoli business impact management solution is Tivoli Business Systems Manager. This innovative product provides a previously unavailable window into your e-business environment. It is designed to generate an intelligent, high-level map of a wide variety of systems and resources to help you understand how a specific resource outage affects a particular business, business process or service level agreement. Tivoli Business Systems Manager is designed to give you the ability—by taking a single action from a single console—to identify all affected lines of business. This capability can enhance your control over the service levels you deliver to each LOB client.

Tivoli business impact management products are designed to help deliver value quickly. For example, a QuickStart service offering is available for Tivoli Business Systems Manager, to help you realize a fast time-to-value.

In addition, Tivoli Business Systems Manager draws on existing Tivoli software design concepts and interfaces to help reduce up-to-speed time on the part of your administrators. They can rely on their existing skills and training to begin using Tivoli Business Systems Manager effectively right away—typically in a matter of weeks, not months.

Tivoli Enterprise Data Warehouse provides powerful data consolidation and reporting across the enterprise. Business Impact Management solutions use data from the Tivoli Enterprise Data Warehouse to help you identify customer trends, predict new business needs, support LOB planning or perform other valuable predictive management tasks.

A key component providing predictive management is Tivoli Service Level Advisor. It is designed to help you meet your performance and availability commitments by reducing the time and effort required to manage the e-business service levels you deliver to your customers.

Tivoli Service Level Advisor simplifies the process of defining and recording service level agreements with your customers. You can use it to get verification of your expected service levels and get early notification when your service levels may be out of compliance in the future. This helps you to anticipate and correct problems with your e-business services before they become a problem for your clients and also supports your IT service planning. As a Tivoli business impact management product, Tivoli Service Level Advisor is designed to help deliver value in days instead of months.

Tivoli Service Level Advisor generates Web-based service level reports that can help you more effectively communicate with your clients about meeting their service level needs. Your IT staff can also get critical reports that relate monitored components to your customers' view of the service levels.

Tivoli Web Site Analyzer can help transform random Web data into valuable e-business intelligence. It can provide you with a clear picture of the overall health and integrity of your e-business infrastructure—which can help with business outcome management. By capturing, analyzing, storing and reporting on Web site usage, health, integrity and site content, Tivoli Web Site Analyzer can shed light on visitor interactions with the site and the site's overall performance. Its multichannel data collection can consolidate globally distributed Web server log files into a

Business impact management solutions provide useful new windows into your e-business environment.

single open data warehouse. And for a more realtime approach, Web page information can be captured dynamically through the Tivoli Web Site Analyzer Web Tracker feature. Together they can create detailed reports and views on Web server activity, visitor statistics and visitor behavior—pushing Tivoli Web Site Analyzer beyond simple analysis by integrating the critical end-user experience dimension. Tivoli Web Site Analyzer has a component architecture and scalable analysis engine that supports high transaction volume. Its comprehensive analysis capabilities can meet the needs of even the largest multinational Web site.

Answering your needs

With the launch of a new generation of performance and availability products in 2002, Tivoli software is answering your need for easy-to-use solutions that simplify the complexity of systems management.

The Tivoli software objective of helping deliver exceptional performance ROI begins with a simple concept: providing innovative products that give you the ability to manage your entire complex network of IT resources. As part of that

commitment, Tivoli software incorporates intelligent features (such as autodiscovery) that help achieve ease of installation, ease-of-use and rapid time-to-value.

But you might find that the most important benefits to your business accrue over time. The Tivoli Performance & Availability solution is designed to deliver additional value after it has been working in your e-business environment— collecting operating data, learning the patterns of your business and leveraging its deep, built-in intelligence about systems management issues.

This is the true measure of the enhanced ROI provided by the Tivoli Performance & Availability solution: It can help drive new efficiencies immediately in your e-business environment, while also providing fully integrated views of your infrastructure and operating data that can help you measure and manage to committed service levels to achieve your goals.

IBM software integrated solutions

The Tivoli Performance & Availability solution supports a wealth of other offerings from IBM software. IBM software solutions can give you the power to achieve your priority business and IT goals.

- *DB2 software helps you leverage information with solutions for data enablement, data management and data distribution.*
- *Lotus software helps your staff be productive with solutions for*

authoring, managing, communicating and sharing knowledge.
- *Tivoli software helps you manage the technology that runs your e-business infrastructure.*
- *WebSphere software helps you extend your existing business-critical processes to the Web.*

To learn more

For information on the Tivoli Performance & Availability solution and integrated solutions from IBM, contact your IBM sales representative or visit **info.tivoli.com**/availability

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.

IBM

*e*business software